

CAMBRIDGE PHILOSOPHERS IV

The fourth of a series of articles on Cambridge philosophers based on lectures originally given in Cambridge in 1991.

Whitehead

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Alfred North Whitehead is rightly considered a Cambridge philosopher. His intellectual life falls into three periods, of which the first (1880–1910) was in Cambridge, the second (1910–1924) in London, and the third (1924–1947) in Cambridge, Mass. But he always saw himself as a Cambridge person, and was a Life Fellow of Trinity College. Moreover, though each of these periods is associated with a different kind of philosophy, some ideas and concerns from the Cambridge period carry right through.

He was born in 1861 in the Isle of Thanet, an East Kent man of generations of East Kent men. His grandfather and father were schoolmasters, and his father later became vicar of St. Peter's-in-Thanet. Whitehead writes of his father, 'He was an equal mixture of a High-Churchman and a Broad-Churchman. His favourite history was Gibbon's *Decline and Fall*. I do not think that any of Gibbon's characters shocked him; for his robust common sense told him that the people of East Kent, with whom he was quite content, were really very unlike the early Christians. His favourite character in the Bible was Abraham, who exhibits many features to endear him to the East Kent mentality'.¹

Whitehead's school education was at Sherborne, where he was taught by masters 'who had read the classics with sufficient zeal to convert them to the principles of Athenian democracy and Roman tyrannicide'.² History was taught on the Whig view, with interest in what Professor Michael Oakeshott has called 'the practical past', by stories and traditions sustaining a liberal way of living and by a propensity to draw analogies. It was not the study of history as concerned with the critical establishment of facts. When he came to treat the history of philosophy in later life, it was in something

¹ From 'England the Narrow Seas', *Atlantic Monthly*, June 1927. Reprinted in *Essays in Science and Philosophy*, p. 48. New York, 1947. (E.S.P.).

² 'The Education of an Englishman', *Atlantic Monthly*, August 1926 and E.S.P. p. 35.

of the same spirit. He was interested in what a phrase from a philosopher of the past—for instance, Locke's about time as a perpetual perishing—might suggest to him, but not in what exactly it might have meant in its context.

At Sherborne he was well taught in mathematics, and came up to Trinity College in 1880 on a mathematical scholarship. After a First in the Tripos he won a prize fellowship in 1884 by a dissertation on Clerk Maxwell's 'Treatise on Electricity and Magnetism'. No copy of this has been preserved. From 1885 to 1910 he was a Fellow of Trinity and Lecturer in Mathematics (the Fellowship was a life one). During these years he took an active part in Liberal Party politics, often chairing meetings in the neighbouring villages. If we thought that politics in Edwardian days were more decorous than they are today, this can be dispelled by his account of a meeting in the Guildhall in Cambridge, addressed by Keir Hardie who was then the leading member of the new Labour Party. 'My wife and I were on the platform, sitting behind him, and there was a riotous undergraduate audience. The result was that any rotten oranges that missed Keir Hardie had a good chance of hitting one of us. When we lived in London my activities were wholly educational'.³

Whitehead was an assessor for a dissertation submitted by J.M. Keynes for a Fellowship at King's College. This was on Probability, and Whitehead reported that he considered frequency theories should have received more attention. In consequence Keynes did not get the Fellowship at King's until later. The work grew into *A Treatise on Probability*, and Whitehead makes eulogistic remarks about it at the end of 'Uniformity and Contingency', his Presidential Address to the Aristotelian Society in 1922.

Whitehead supervised Russell at Trinity and they became friends. In 1900 he and Russell went to an International Congress of Mathematics in Paris, where they met and were impressed by Peano and were attracted by his symbolism for mathematical logic. I once asked Whitehead's biographer, Victor Lowe, when Russell first got to know about Frege, and I quote from a letter (June 16, 1965) 'In the course of several hours with Russell a week ago, I asked him your question. He answered that he read Frege's *Begriffsschrift* within a month or two of his discovery of Peano in July 1900. (He has also said in print that his tutor, James Ward, had given him the book when he was an undergraduate, but that he hadn't read it, any more than Ward had for years.) Russell thereupon told Whitehead about Frege, he says'.

³ 'Autobiographical Notes'. In *The Philosophy of Alfred North Whitehead*, p. 13. Library of Living Philosophers, Evanston, Ill., 1941.

In 1898 Whitehead published his *Universal Algebra* and Russell published *The Principles of Mathematics* in 1903. They found they were thinking on similar lines about the logical basis of mathematics and they embarked on their collaboration in *Principia Mathematica*. Russell wrote a note in *Mind* (1948), after Whitehead's death, describing how they shared the work; it was clearly thoroughly collaborative, each reading and criticizing the other's drafts. There was to have been a fourth volume of *Principia Mathematica* on geometry exclusively by Whitehead, but this was never written.

The collaboration ended in 1910 when Whitehead moved to London, first to be Lecturer at University College and then Professor of Applied Mathematics at Imperial College. His interest was increasingly turning to a philosophy of nature, though this was already present in a memoir 'On Mathematical Concepts of the Material World' which was submitted to the Royal Society in 1906. This memoir has been thoroughly discussed by Dr. Wolfe Mays.⁴ Broadly, Whitehead is claiming that points, instants and the material particles said to be situated in them can be constructed out of a set of relations presented axiomatically and issuing in linear elements interpreted empirically by lines of force.

Whitehead's philosophy of nature was marked on the one hand by his concern with logico-mathematical schemes and on the other by an insistence on the rich, complex world of experience. He wanted to show how the former could be abstracted from and related to the latter without the abstractions being treated as if they were real elements. To do so was to commit 'The Fallacy of Misplaced Concreteness'. Russell says in his *Portraits from Memory*, 'It was Whitehead who was the serpent in this paradise of Mediterranean clarity'—i.e. Cambridge philosophy in the first decade of the century. 'He said to me once "You think the world is what it looks like in fair weather at noon-day. I think it is like what it seems like in the early morning when one first wakes from deep sleep". I thought his remark was horrid, but could not see how to prove that my bias was better than his. At last he showed me how to apply the techniques of mathematical logic to his higgledy-piggledy world and dress it up in Sunday clothes that a mathematician could view without being shocked' (p. 41).

An outstanding instance was the Method of Extensive Abstraction. A point is defined as a set of regions, such as squares or circles, extended over or extending over others, with diminish-

⁴ 'The Relevance of "On Mathematical Concepts of the Material World" to Whitehead's Philosophy'. In *The Relevance of Whitehead*, ed. I. Leclerc, London, 1961.

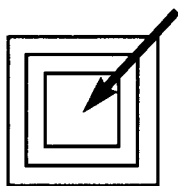


Figure 1.

ing or increasing areas. There can always be a smaller or a larger square (or circle) and there is no region which extends over all the others (i.e. another outer region can always be added). A point is defined as the route of the whole set of diminishing regions. It is the diminishing set, not a limit to which the set is approximating, which defines the point. If there were a limit, it would be a point having no magnitude, which is something never given in experience. Whitehead claims that we have experience in perception of regions extending over and enclosed in other regions. We do not of course perceive these in raw experience in the precise pattern presented in Extensive Abstraction. This is what Stephan Körner would call an 'idealization'. But it is an idealization of something which in principle could be perceived, whereas unextended points and durationless instants cannot.

This relation of Extension—of something extending over or overlapping with something else—was fundamental to Whitehead's philosophy of nature as it was presented in *An Enquiry Concerning the Principles of Natural Knowledge* in 1919. We start from what we perceive, which is 'the specific character of a place over a period of time'. This is called an event, qualified by what he calls, not very happily, 'objects'. 'Objects' are not material objects, nor particulars. They are best thought of as properties (we might say 'universals', except that this term carries metaphysical connotations which Whitehead probably wanted to avoid). Whitehead later spoke of 'eternal objects'. They are repeatable, as able to qualify any number of events—redness would be an example. Events are particulars—indeed in the event ontology of this period they are the basic particulars. 'The world we know is a continuous stream of occurrence which we can discriminate into finite events forming by their overlappings and containings of each other and separations a spatio-temporal structure'.⁵ Events are succeeded by other events in what Whitehead calls 'the passage of nature'. Besides this relation of succession events can extend over others and be extended over. My saying this word is extended over by saying this sentence, which is extended over by my life history this

⁵ *The Concept of Nature*, p. 172. (Cambridge, 1920).

afternoon, thought of as an event, to be extended over by my whole life history. Substances, i.e. things and persons, become characters of events; Socrates is a Socratic slice of Athenian history.⁶ Whether events are longer or shorter, whether they are seen as extending over or being extended over, depends of course on how they are described. But Whitehead would hold that marking out events under descriptions (as in my example of saying a word—saying a sentence—giving the lecture—) follows certain natural boundaries, shown by the qualifying ‘objects’. So the events are not just arbitrary slices of space and time. They have of course volume and duration. An ‘event particle’ at a point and instant is to be defined by the Method of Extensive Abstraction.

The relation of Extension is primary for the event ontology of *An Enquiry concerning the Principles of Natural Knowledge* of 1919. But there is an important note in the second edition of 1924 (p. 202), “This book is dominated by the idea that the relation of extension has a unique pre-eminence and that everything can be got out of it. During the development of the theme, it gradually became evident that this is not the case, and cogredience had to be introduced. But the true doctrine that ‘process’ is the fundamental idea, was not in my mind with sufficient emphasis. Extension is derivative from process and is required by it.”

This introduces two fundamental concepts: cogredience and process. I shall take cogredience first. It means that events as spatio-temporal are related to a focal event called a ‘percipient’. The ‘percipient’ answers to the observer in Special Relativity. It need not be a conscious percipient, and when Whitehead speaks here of ‘subjectivity’ it is in a weak sense of token-reflexivity, giving a ‘here—now’ with reference to which events are ordered spatio-temporally. I shall be returning to this notion of cogredience, and to how subjectivity acquires a stronger sense in his later philosophy.

First, however, I shall try to say something about his interest in

⁶ The replacement of Substance by processes and events went along with an attack on the adequacy of the Subject/Predicate form of language. Whitehead wrote no specific work on the nature of language, but there are remarks scattered throughout his books, notably in the last one, *Modes of Thought*. These suggest he saw language going on in a flow with emphasis-patterns, rhythms, reiteration, contrasts, its nature being shown in the spoken word rather than in the written text. Margaret Masterman claimed that this was a fertile view when one tried to uncover deep structures in language. See her paper ‘First Impressions of a Whiteheadian Model of Language’ in *Whitehead und der Prozessbegriff*, eds. H. Holz and E. Wolf-Gazo, Alber, Freiburg, 1984.

the Theory of Relativity. I say 'try', because I am conscious of only being able to approach it from a long way off. I believe, however, that in his views on Relativity, Whitehead was drawing on concepts which are important in his wider philosophy. His technical development of an alternative view to Einstein's is given in *The Principle of Relativity* of 1922. This is a very difficult book, and was little read even by mathematical physicists. There were a few of these, however, who said it should be taken seriously—allegedly Eddington at one time. More recently Professor J. L. Synge of the University of Maryland has published some lectures on it (1951). Professor Synge, however, is reported⁷ to have come later to the conclusion that Einstein wins.

That Einstein wins is also the conclusion of two writers who discuss Whitehead's views on Relativity in the volume in the Library of Living Philosophers, Professor Northrop in a piece on 'Whitehead's Philosophy of Science', and Professor McGilvary on 'Space, Time and Simple Location'. I refer you to them as the experts and shall only look briefly at some aspects of Whitehead's view which seem to me to bring out features which are important in other parts of his philosophy.

He starts from the notion of events as succeeding and overlapping other events in the passage of nature and of Space and Time as derived from the relations of succession and extensive connection between events. A succession of events forms a time system with durations. A duration is roughly the contemporary world in a specious present, which can be experienced while nature at a moment cannot be. Events within a duration are perceived as simultaneous (perception can be tactual and organic as well as visual; Whitehead gives an example of the experience of barking both shins at the same time). Space is derived from durations by showing them covering smaller ones in a diminishing series extension abstraction-wise. The route approximates to a line and a plane at this line would represent the Space of nature at a moment. The event with its duration is an actual state of nature. The diagram shows how I see this.

T is a time-system where an event E has a duration DD'. DD' can be thought of as reduced in extensive abstraction to SS' which is the Space of the contemporary world at a moment. Durations preceding and succeeding others in a time-system are parallel.

Events are simultaneous if a duration in one time system inter-

⁷ By Leemon McHenry in the second volume of Victor Lowe's biography *Alfred North Whitehead: the Man and his Work*. The Johns Hopkins University Press, 1990. (p. 127).

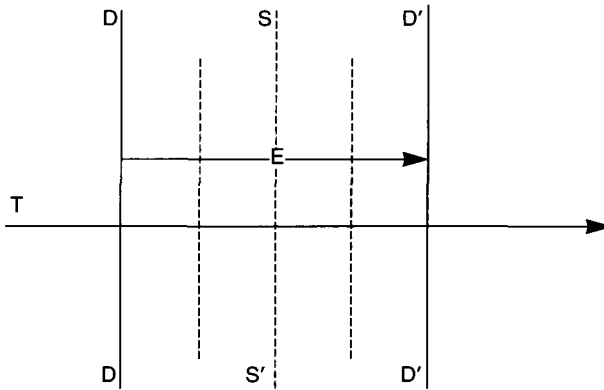


Figure 2

sects a duration in another time system, so that events are perceived as having a shared duration. Events which are simultaneous for these time systems need not be simultaneous for another time system. This would be in accordance with Special Relativity, Simultaneity is not the occurrence of events at the same instant, except insofar as an instant is defined by the Method of Extensive Abstraction, where durations extend over other durations. Whitehead holds that events are perceived as simultaneous within a duration; for instance the stopping of train at a platform and the hands of a clock reaching a certain position. Whitehead denies that simultaneity depends on any special empirical considerations, notably the constant velocity of light signals, as in Einstein's Relativity, where the simultaneity of two events is judged by the light signals reaching a point mid-way between them at the same time. Einstein in fact allowed perceived simultaneity for events at short distances, for instance the arrival of the train and the movement of the hands of the clock. Light signals only give a criterion for simultaneity for events at great distance. Whitehead does not make this distinction. Also he holds that Space is uniform, connecting this with the fact that measurement in Space depends on congruence. A measurement is made by perceiving congruence between whatever is being measured and the length of, say, a rod. Whitehead claims this congruence is preserved in different time systems, and that there is nothing conventional about the measuring criteria and their constancy. This has been criticized by Adolf Grünbaum⁸, who holds there is an element of convention about the criteria adopted for judging congruence. As I am unsure in

⁸ 'Whitehead's Philosophy of Science'. *Philosophical Review*, LXXI, 1962.

these matters, I refer to Grünbaum's paper, only remarking that his criticism is made from the standpoint of a very different philosophy of science. Nevertheless, I think he is probably right in his criticism of the notion of perceived congruence as absolute across different Space-Time systems.

Whitehead's views on Relativity were strongly affected by his insistence on the uniformity of Space. He derives metric Space from Space as perceived, where he holds we have direct intuitive perceptions of congruence and that Uniformity of Space is required for the preservation of congruence in different time systems. Physical space is a more abstract interpretation of this space. He saw Geometry as a theoretical science applicable to physical space, which he held was Euclidean, at any rate for what he calls our 'cosmic epoch'. It need not be Euclidean in all possible worlds, but he held that it must be uniform in any possible world. This is at variance Einsteinian General Relativity, when there is a curvature of Space variable with the distribution of matter.

Whitehead's natural philosophy was given in the three books of his London period—*An Enquiry Concerning the Principles of Natural Knowledge* (1919); *The Concept of Nature* (1920); and *The Principle of Relativity* (1922). It was also presented in a summary and perhaps more readily assimilable form in contributions to the Aristotelian Society during these years. 'Uniformity and Contingency' (his presidential address of 1922) contends for a uniform system of internal spatial relations while the qualities called 'objects' are variable. Whitehead has contributions to two symposia—'Time, Space and the Material' (Supplementary Vol. II, 1919), which deals with the interconnection of these concepts, and 'The Problem of Simultaneity' (Supplementary Vol. III, 1923). The meetings of the Aristotelian Society in these years attracted a number of heavy-weights. We cannot now know whether there was any close discussion of Whitehead's views, which, *more suo*, he expounds rather than argues. When he went to Harvard in 1924 he did not have this milieu, though of course he had some very able colleagues. The tendency to expound seems to have grown on him.

Science and the Modern World of 1925 is a water-shed between the philosophy of nature, his London period, and the metaphysical cosmology of his last period. In *Science and the Modern World* he is trying to produce a generalized view of organism which could unite the physical and the biological sciences. In the earlier books there were cogredient events in durations ordered in relation to a focal event called the percipient. This gives a unification of events in a perspective which involves an internal relation between the percipient event and all other events throughout nature. It is a

repudiation of what he calls 'the Fallacy of Simple Location'. The whole of nature can be thought of as in a spatio-temporal unification with reference to a focal event, and this intersects and overlaps with other events each of which is another unification of nature. So one might say that we are all ubiquitous and all on top of one another, but that we create centres of disturbance when normally speaking we would be said to be. 'Disturbance' is a word which suggests activity, and this is something to which I will return. Meanwhile, some more must be said about each event being the focus of a spatio-temporal unification of other events. As Whitehead says, when I come into a room there is a new unity of room-related to me: 'A structural togetherness is being realized'. In *Science and the Modern World* (Cambridge, 1926. p. 146) such a unification is called a 'primary organism'. In a weak sense this could be said to be a matter of token-reflexivity, where events are ordered perspectively in relation to an event which gives a 'here-now'. But there is more than a token-reflexive spatio-temporal relation. The primary organism has a stronger sense as being 'the emergence of some particular pattern as grasped in the unity of a real event'. 'Grasped' is another word suggesting activity, and in *Science and the Modern World* events become centres of activity in active relations to all the other events of their environment, i.e. the rest of nature. These active relationships are called 'prehensions'. A prehension is not a conscious awareness, which would be 'apprehension'. It is a grasping of one thing by another, like a monkey taking hold of a branch with its prehensile tail.

It seems bizarre to think of events as active, rather than just as occurring, and in his later philosophy Whitehead speaks of 'actual entities'. (I am not sure he realized how big a change this was). Whitehead calls this later philosophy 'the philosophy of organism' and 'organism' now acquires a yet stronger meaning as 'a concrescence of prehensions'. We have not only a focal centre, nor even only a centre of active relations to other things, but a *concrescence*, something which grows and develops through the relationships called prehensions. There are problems over 'prehensions' stemming mainly from the view that an actual entity develops to a climax and then perishes, and is succeeded by another in a route. The successor prehends, or picks up, certain aspects of its predecessor and uses them as elements in its own development. The original actual entity has perished as a 'subject', but something of it is perpetuated as a 'superject' in the successor and successors which 'prehend' it. I think there are great difficulties over this since it seems to lose the element of *transition*, which was central in Whitehead's criticism of Hume. Here he claimed that our expe-

rience is not of distinct impressions, but always comes with a sense of derivation, of *going on*. This might be allowed for under prehensions, but transition clearly suggests a 'passing into' rather than a 'picking up' view of causation. Prehension seems like a kind of backward causation: not indeed one in which effects precede their causes, but one in which any efficacious activity there may be is in the successor effect. (Also Whitehead does not allow causal interaction between contemporaries.)

I think that those, notably biologists, who have been attracted by Whitehead's view of an organism as a 'concrescence of prehensions' have not worried themselves over these difficulties, and they are probably wise. Among biologists, C.H. Waddington acknowledged a debt to Whitehead. He does this in a paper 'The Practical Consequences of Metaphysical Beliefs on a Biologist's Work' (In *Towards a Theoretical Biology* 2, Edinburgh, 1969), concluding 'As far as scientific practice is concerned the lessons to be learned from Whitehead were not so much derived from his discussions of experiences, but rather by his replacement of 'things' by processes which have an individual character which depends on the cocrescence into a unity with very many relations with other processes' (p. 76). That is to say, Waddington concentrated his attention on looking at organisms as developing patterned processes, with multiple relationships in both their external and internal environment, rather than as determined through linear strands of causes and effects.

But Whitehead's Philosophy of Organism was designed to reach far beyond biology. It was set out in *Process and Reality* (1929), where he presented a comprehensive metaphysical system. This was given as Gifford Lectures in Edinburgh in 1928. It is said that the very large audience at the first two lectures faded away on being presented with eight categories of existence, twenty-eight categories of explanation, and nine categoreal (sic) obligations. The final audience consisted of one or two sponsoring professors, notably Professor Kemp Smith. A number of Whitehead's books were first presented as lectures, and show little consideration for his audiences; not much is given in the way of explanation, and even as books they need several readings. The style is almost purely expository. He does not engage in argument with contemporary philosophers, though he draws liberally on the great philosophers of the past for suggestions and analogies. The outcome is given to you to take or leave.

Process and Reality comprises not only a metaphysical system, but also what he calls 'an essay in cosmology'. He once said to a class I attended 'Write on my tombstone "He tried to form a cos-

mology”⁹. I think this meant that he was giving a view of the nature of things which could be a general interpretation of the outcome of the sciences, especially the physical and biological sciences, and could also take account of our human experiences including aesthetic and religious experiences. One can see at work here the conviction with which he started out in his early period: that we should recognize the richness, complexity and even vagueness of actual experience, and also that we should form abstract schemes of interconnected concepts and try to show how experiences are interpretations of these. There is also another conviction; that different kinds of experience should in the end be interpreted by the *same* general concepts. Such concepts formulate the nature of the ‘actual entities’ which compose the world, and these are fundamentally the same. ‘The presumption that there is only one genus of actual entities constitutes an ideal of cosmological theory to which the philosophy of organism endeavours to conform’.⁹

As we have seen in his middle period Whitehead was trying to produce a generalized view of an organism which could unite the physical and biological sciences. His ‘primary organism’ was a unification of events token-reflexively from the standpoint of a focal event. This was consonant with Relativity, and indeed it might be thought that his Relativity Physics includes biology in what he calls ‘organic mechanism’. But we also saw that in *Science and the Modern World* his events are becoming centres of activity internally related to each other in ways that are not only spatio-temporal. They then become organisms in a stronger sense, which is more like the biological one. These centres of activity—actual entities—are processes of self-development, each reaching a terminus called its ‘satisfaction’ (meaning ‘made complete’, not ‘being contented’), and then perishing and being succeeded by another which ‘prehends’ it. Macro-objects as we experience them are routes of actual entities in multiple relationships; these are called ‘societies’, and can appear as relatively permanent. The activity in becoming and perishing goes on in the constituent actual entities. Not only ‘activity’: in *Process and Reality* the term ‘feeling’ is used. Whitehead says this is a technical term for the activity of appropriating, and the datum appropriated. Yet even as a term of art, it is impossible to get rid of the suggestion of sentience in this omnibus use of the word ‘feeling’. Nor, I think, does Whitehead want to do so. He speaks of all actual entities as having a ‘mental’ as well as a ‘physical’ pole, and, although the former

⁹ *Process and Reality*, Revised Edition, p. 110, New York, 1978.

need not be consciously cognitive, this allows him to speak of actual entities as 'units of experience'. This is not Idealism since nature is not dependent on mind; 'mind' is a term for a way of functioning of actual entities within nature. Whitehead repudiated the label 'pan-psychism' which is sometimes used of his later metaphysics. Since the ways of functioning of actual entities, including the mental ways, are forms of feeling, we might call it 'pan-aestheticism'. I would be tempted to say 'pan-pathology', but that sounds morbid.

The general ascription of feelings makes all actual entities into little organisms. Actual entities are much further down the scale than what are generally known as micro-organisms. Nor presumably would they even be the fundamental particles of physics. Whitehead says that an electron, for instance, as a 'scientific object', is to be taken realistically as a 'causal control' of observed happenings in nature, while as conceived of by physicists it is a theoretical object abstracted from what is actually exercising causal efficacy. Yet in any case it seems strained to think of the basic units of nature as having 'feelings'. When Whitehead was working towards a generalized view of organism, which might connect the physical and biological sciences, at first it looked as though physics, in the form of a Special Relativity view of events as internally related to a percipient event, might be swallowing up biology. But in the later 'philosophy of organism' it looks as if biology, or rather a kind of psycho-physiology, was swallowing up physics.

I have said that two convictions which run right through Whitehead's philosophy at all stages are at work here. One was his insistence on the rich character of basic experience, and his resistance to 'The Fallacy of Misplaced Concreteness', whereby something simpler and more precise, which is in fact an abstraction, is substituted for this. The other is the insistence that in the end there is only one type of basic entity, and that the same fundamental principles should be common to all entities throughout nature. He fastens on our experience of our embodied existence as the paradigm of their exemplification. Our primary physiological experience comes with emotional tone. (The philosophy building at Harvard had an inscription over the door—I cannot remember what it was, only that it was something very high-minded. Whitehead said to us in a class, 'You will have noticed that inscription as you came in. I suggest you substitute for it "Meditate on your viscera"'). Besides experience with emotional tone, the body is for Whitehead the receptor of causal influences in sense perception. It is also the paradigm for the 'percipient' or

‘observer’ in a spatio-temporal frame of reference. So what Whitehead seems to be doing is fastening on our psycho-physiological embodied experience, and stretching it upwards and downwards; upwards into cognition, called here ‘conceptual feelings’, and downwards into the physical world, whose ultimate constituents have sentience, however ‘low-grade’. We cannot avoid the problem by saying that his actual entities are metaphysical and not natural units, since Whitehead claims that his metaphysics is an attempt to give a ‘cosmology’ a general description of the nature of the world and its constituents. His view may be called a homogeneous pluralism.

There may indeed be characteristics common to all things in nature. Yet certain of the characteristics Whitehead assigns to all actual entities may belong more properly to those of specific types—biological organisms, for instance, or rational persons. For Whitehead these would be ‘societies’ of micro actual entities, but it is these latter, and not the macro societites, which are centres of experience with the properties proper to such.

A view in which there are different levels in nature where radically new qualities appear was held by Whitehead’s near contemporary, Samuel Alexander. Whitehead speaks of Alexander with great respect, though I doubt whether he was influenced by him. Indeed, I think Whitehead developed his own views with very little influence from other philosophers, though he is eager to claim affinities and analogies. We may note that Alexander started out with an interest, and some training, in neurophysiology and ended with a metaphysics of a world constructed out of Space-Time Point-Instants in which organisms emerge, while Whitehead started out as a mathematician with an interest in Relativity Physics, and ends with a metaphysics whose units are like psycho-physiological organisms, with Space and Time derived from their relationships. Bergson was another near contemporary about whom Whitehead makes complimentary remarks. Bergson might indeed be regarded as the best known philosopher of a world in process. But there are crucial differences. Bergson’s creative evolution was essentially a movement of Time, *durée*, whereas for Whitehead Time is derived from the passage of nature. Also Whitehead, with his concern for formal schemes and their interpretations, did not follow Bergson in seeing Reason as a distortion of an authentic power of Intuition.

So Whitehead’s metaphysics is hard to classify as well as hard to grasp. I have only been able to draw attention to some of its features. I shall try in conclusion to say something about his Natural Theology. This is the part of his later philosophy which has been

fastened on by the Process Theologians in America, who, alas, often treat him as a guru, and are not, I think, always critically aware of the difficulties. (I make an exception here of Professor Hartshorne, who has a tightly thought-out Natural Theology which he has developed independently, though he is glad to recognize affinities with Whitehead's views.)

Whitehead's Natural Theology contains his notion of an ultimate, in *Science and the Modern World* called simple 'activity', and in *Process and Reality* 'creativity'. Creativity is a potentiality for producing anything whatsoever, and therefore by itself it could produce nothing in particular. For there to be anything in particular, there has to be some constraint on pure creativity in a basic order which he calls 'The Primordial Nature of God'. This sets the stage for the arising of innumerable actual entities, each one of which develops itself as a new unity in relation to the many others, and when it has developed it perishes. But this is not the whole story. Out of the union of creativity and the Primordial Nature of God there also comes what is called 'the Consequent Nature of God', and together these form God as an actual entity. (We should resist the temptation to use para-Trinitarian language here). Whitehead says this actual entity is 'everlasting', meaning that it is continuous with the whole creation, and since this has no endpoint, God never comes to a fulfilment and then perishes like other actual entities. This conflicts seriously with Whitehead's saying that God is as other actual entities. But like all actual entities He (*sic*) develops as a concrescence of prehensions, taking up and incorporating aspects of other actual entities when they perish. This is called their 'objective immortality'. It is not subjective immortality for the actual entities lose what is called their 'subjective immediacy'. I see Whitehead's God as a kind of cosmic Proust, responding to multifarious events and lives, and, *à la recherche du temps perdu*, weaving his responses into a great aesthetic composition, which goes on being composed everlastingly. However, in his last writings, notably in *Adventures of Ideas*, the religious emphasis is on how the creative process shows a tendency in the universe to produce worthwhile things, and this is something on which process theologians may do well to reflect.

I think that Whitehead was always clear in his own mind as to what he wanted to say. But his style was not that of a ready communicator either in lectures or in the written word. At least this is so with his technical expositions; not so in the untechnical reflections on people, periods, and literature which also appear in his books, particularly the two last *Adventures of Ideas* and *Modes of Thought*. There are also the vivid and witty autobiographical

sketches.¹⁰ Moreover even in the course of the technical writing there is the occasional aphoristic remark which stands out and hits one. I end with a few which bear on the practice of science and philosophy.

‘Philosophy never reverts to its old position after the shock of a great philosopher’.

‘A science which hesitates to forget its founder is lost’.

‘If men cannot live on bread alone still less can they live on disinfectants’.

‘The guiding motto in the life of every natural philosopher should be “Seek simplicity and distrust it”.’

¹⁰ These will be found in the Autobiographical Notes in the volume in the Library of Living Philosophers and in the pieces listed under ‘Personal’ in *Essays in Science and Philosophy*.