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The Temporal Genetic Series As a Means of Approach to Philosophy

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I have not been quite clear whether I am regarded primarily as a biologist or as a psychologist by my fellow members of this club. I have been a professional biologist, with comparatively short intermissions, for nearly 40 years, but I am not and have never been an experimentalist in the ordinary sense, though in [Thomas Dewar] *Weldon's* sense I might perhaps put in a claim to the title. And this not because I do not fully realize the immense value to biology of the experimental method, by which I mean the deliberate controlled interference in the ordinary course of nature for the purpose of getting nature to answer questions that have aroused our interest or on subjects on which we have formed theories. On the contrary, I am convinced that real progress in biology depends very largely indeed, if not almost wholly, upon experiment in this sense, and it is a conviction that increases with the years. I have not been an experimentalist because I have little natural love for experimentalism and I have found more than enough to do in other fields. But in thus neglecting experiment I fully realize that I have missed the chance of contributing humbly to the progress of biology in any significant sense, though this does not in fact greatly distress me.

In psychology, I am merely an amateur. As an undergraduate, I took my share of the usual interminable discussions on the universe—on philosophy, psychology, religion, politics, art, and sex. I was mildly enthused by the work of William James, particularly by the *Principles* [James 1890], and I read or dipped into various other psychological works, but I made no serious study of the subject. It was not until I was past 35 that I was introduced to modern psychopathology by my friend Bernard Hart [1912], one of the pioneers of the subject in the country. He failed to get me interested in [Pierre] Janet's work [1907], but succeeded quickly enough with Freud's, in which he was profoundly interested and which he was trying out in the asylum where he was a medical officer. From that time onward, my interest in psychoanalysis steadily grew, reaching its highest pitch of intensity during the war, when I read all of Freud's more important works. Later on, I spent 9 months altogether with Freud himself and even, on his advice, myself conducted an experimental analysis, lasting nearly 2 years, on an obsessional neurotic. Since then, my interest in the subject has remained untouched, together with my conviction of the essential truth of Freud's main conclusions, though I believe some of them require restatement. In 1926, it was touch-and-go whether I became a professional psychoanalyst or took my present job. I still keep in touch with psychoanalytic circles, though it is rather a light touch now, moving to preoccupation with professional work.

In philosophy, I am not even an amateur but just an ignoramus. It is true that during my undergraduate days I was a close friend of Bertrand Russell, who read philosophy at the same time as mathematics, and it would be difficult to estimate what I owe to the constant intercourse with his singularly acute mind. But I could never make much headway with such serious philosophical books as I tried. And the result, of course, is that I do not know my way about the subject and am quite likely to make the most elementary blunders through sheer ignorance, or on the other hand to imagine that I am stating something of real importance when it is in fact a mere commonplace of the textbooks. And yet I clearly must invade the region of philosophy if I am to try to make any contribution to our discussions.

I ought perhaps to apologize for all this autobiographical preface, but it seems to me reasonable to provide a certain background against which you may perhaps be better able to assess the value (if any) of what I have to say.

The modes of approach of metaphysicians and biologists to problems concerning the human mind are necessarily widely different. The metaphysician, seeking to establish knowledge that shall be universally valid about the mind and its relation to the universe, takes the highly developed mind of European man, as it seeks to understand itself and the universe around it, as a starting point in his attempts to establish such knowledge. He takes this highly developed instrument, with all its complexities and all its liabilities to error as it were for granted; he is not, at any rate primarily, interested in its makeup, its origin, or its structure. The biologist on the other hand, necessarily looks upon what we call mental activity as a function of the human organism: The mind is for him merely a convenient expression for the sum of the activities of a certain type within an individual organism, and he may without inconvenience—often with positive advantage—refuse to recognize the mind as a separate entity. So far as he is interested in the mind, he is primarily interested in its organic (in the sense of biological) antecedents and correlates: secondarily, perhaps, in the ways in which mental activity extends the power of the organism to adapt itself to its surroundings, though here he is invading the border territory between his own and that of the psychologist.

The psychologist occupies an intermediate position. The central object of his study is the mind itself. He may adopt a metaphysical or a biological approach if it happens to suit his immediate purpose. But he ought to take mental phenomena as he finds them without either transcendental or mechanistic preconceptions. It is well known that the method and character of the fruitful work of modern psychology has had more in common with biology than with metaphysics. It has treated the mind as an organism, and it has worked with mechanistic postulates. But psychology is not and cannot be a mere *branch* of biology so long as it recognizes psychical phenomena as *sui generis:* because that implies a distinct field, the mind or psyche—I use the words as interchangeable—in which they have their being. For behaviorism, of course, psychology *is* a branch of biology.

The question now arises: Can these three distinct fields of enquiry perhaps contribute among them to some kind of coherent philosophy? Or must they remain eternally separate, and if so why? This is another way of putting the problem that [Thomas Dewar] Weldon raised at the end of his paper last term. [T. D. Weldon unpublished; but see Weldon 1945], when he pleaded that it was dangerous to neglect the "gaps" between apparently distinct departments of knowledge.

I propose at the outset to assume the validity, within their own spheres, of the methods used in each of these lines of inquiry, for there is no *prima facie* reason to doubt it; and to the three we must add a fourth, the method of physical science, for we cannot assume offhand the complete continuity of inorganic with vital phenomena. I propose also to treat all the phenomena involved, considered in their proper relations, as equally "real", for I can see no convincing reason for drawing distinctions in this respect.

In surveying the field of knowledge from this point of view, I am, of course, inevitably biased by my training in natural science to begin from the physical end. I cannot start from the metaphysical. I must use as a framework the history in time of the visible universe and of this planet, as these have been inferred by the methods of science, leading up to the appearance and development of life, and ultimately to man with his mind and its specific activities. We need not, I think, for my immediate purpose, concern ourselves with speculations about the origin of the universe in time, if it had an origin in time, or with time–space relations. In the first place, I shall occupy myself solely with the temporal genetic series, as I shall call it: inorganic matter–living organism–mind, as this series appears to be revealed by science, considering especially the nature of the apparent gaps in the series, or what amounts to the same thing, the causes of the difficulty in bridging them conceptually. In using the term "genetic series" I may appear to be begging a fundamental question by assuming that life is "produced by" inorganic matter, and mind by life. I do not want to beg any question, and I might better perhaps speak simply of the temporal series or temporal sequence, but I do want to keep the attention of my hearers on this series as at least one, and possibly an important, means of approach to philosophical enquiry.

We are accustomed to say that what we call inorganic matter "obeys the laws of" physics and chemistry, by which we mean, of course, that we can detect and measure constant, or approximately constant, relations and sequences between various aggregations of different orders. Theories of the ultimate nature of matter, the speculations of physicists, or of metaphysicians in regard to it are irrelevant for my purpose. I am certainly not concerned

to attribute to matter any superior kind of reality, and the nature of the stuff of which the universe is composed is indifferent to my exposition. I am quite willing to concede that the "laws" of physics and chemistry are statistical generalizations and that when we say that matter "obeys" these laws, all we mean is that various kinds of aggregates behave within themselves and in relations to one another with a high degree of certainty, and we can therefore predict future behavior with a high degree of certainty. This is all I mean by determinism. The facts that the means of observation we have to use alter the condition and therefore the course of the phenomena observed, that if we determine the position of an electron we cannot at the same time determine its velocity, and vice versa, do not alter the validity of our statistical generalizations about aggregations of electrons, nor does the fact that we have no means of predicting the path of an electron struck off from an atom. At different levels of complexity, we are unable to determine the exact places of appearance or the exact courses of the eddies in a millrace, or the exact behavior of the human mind, though we can predict with confidence that a number of eddies will be formed at the sides of a fast-flowing body of water in a confined channel, and that human minds will tend to react in certain ways in certain circumstances. It is also true that we cannot observe the activity of the human mind without altering the conditions of its working. It is certainly true that the conditions under which the constituent parts of the atom—the protons, electrons, and neutrons—exist and interact and move are exceedingly different from the conditions governing the existence, interactions, and movement of grosser forms of matter, but it is perfectly clear that the behavior of these excessively minute units *is* conditioned, *is* subject to "laws," otherwise, progress in our knowledge of the structure of atoms and the behavior of their constituents under incident forces—progress that is actually being made—would be impossible. To suppose that an individual electron "chooses," in some transcendental sense, its own path, seems to me merely fantastic, but then I confess that the belief that a human being chooses, in a similar sense, his course of action seems to me equally fantastic. Everything in the universe acts according to its own nature, and, if that is what we mean by "freedom," is therefore completely free. And since everything interacts with other things and its behavior is jointly determined by its own nature and by the nature of the things with which it interacts, and since nothing can be conceived of as behaving in any other way, it is also completely determined. But to this topic I shall return at the end of my paper, when I have to consider the human mind in its ethical aspect.

To pass to life—to what biologists call organisms. We do not know how life began on the earth's surface. There is not evidence, and very little likelihood, that it came there from outside, and it is generally held by those who interest themselves in such speculations that it originated in the water of a primeval ocean when the temperature had sunk to a certain level after its original condensation on the surface of the cooling planet [Haldane 1929]. Of the exact conditions under which protoplasm, the general name for living substance, thus took origin, we know nothing. No one has succeeded in making protoplasm experimentally, nor in observing its natural formation from inorganic units: We have no evidence as to whether it was formed from inorganic matter over a relatively short period in the history of the earth, or whether such events were recurrent and are possibly still taking place.

There is no sharp boundary between organic and inorganic chemical compounds. There are large classes of chemical substances that are always associated in nature with the constitution and the activity of living organisms. These are commonly known as "organic" substances, but many of the simpler among them can now be made artificially in the laboratory. Furthermore, there is evidence of the existence today of substances of a lower grade of organization than protoplasm, but sharing its powers of self-maintenance and propagation—I mean the substances that produce the so-called virus diseases—and it is plausible to suppose that some such substances as these were the forerunners of protoplasm in the origin of living organisms. If this were so, life arose gradually, not suddenly. Protoplasm, in its physico-chemical aspect, is a complex mixture of organic and inorganic substances; a mixture, however, that is also a *system,* which with the help of regular exchanges of material between itself and its surroundings can to some extent arrest entropy within itself (as was pointed out in one of our earlier discussions), can maintain itself indefinitely under suitable conditions, can add to its mass by assimilating material from outside, and can propagate itself by division. Here, then, we seem to have something that is unique in the physical universe as we know it, notwithstanding that the protoplasmic unit has never been shown to contain anything but the materials of which the inorganic universe is made, nor to disobey the laws of chemistry and physics. Its power of arresting entropy is a partial, local, and temporary power that is perfectly intelligible physically, and that cannot arrest the process of equalization in the distribution

of energy through the universe at large—a process that will, so far as we can tell, ultimately bring about conditions under which the protoplasmic units cannot continue to exist.

I need not deal with the steady advance in our knowledge of the physico-chemical mechanism of life. That knowledge is certainly very far from complete. It may indeed never be completed, but I see no reason to suppose that there are any phenomena of life (leaving "mind" for the moment out of consideration) that are not theoretically capable of "explanation" in terms of chemistry and physics. The general phenomenon that many people regard as distinguishing organisms most fundamentally from nonliving matter is the teleological orientation of their behavior. It is impossible for me to discuss this problem now, and I must content myself with saying that I do not believe that teleology exhibited by organisms to be outside the range of mechanical explanation.

The "uniqueness" of the organism in nature is therefore in my view a limited uniqueness. The phrase may be objected to, but I am inclined to think that all uniqueness is relative, except that which is attributed by man, for his own purposes, to certain creations of his mind. Organisms are to be regarded as self-maintaining physico-chemical systems able to assimilate material from without, to reproduce themselves, to respond specifically to influences from without, and, within limits, of astonishing stability. None of these properties is unique, parallels to all occurring in purely "inorganic" systems, but in combination they have created a new phenomenon with the most remarkable consequences. Of trifling effect on the universe at large, living organisms have given rise to the most extensive changes on the surface of this planet, and at the same time have created a distinct sphere of existence that has attained immense complexity and that necessitates separate study and a distinct branch of science with its own methods and "laws." Subsumed as they may be under these "laws," however, biological phenomena constantly cry aloud for interpretations in terms of chemistry and physics, and the progress of this kind of interpretation in recent years has been continuous, however distant the end may still be.

This is the only account I can give of the first great gap in the genetic series, the gap between the not-living and the living. It is, of course, a purely mechanistic account and amounts to a denial that the gap is unbridgeable in terms of chemistry and physics. This position seems to me reasonably probable on our existing knowledge. At the same time, the appearance of organisms on the earth's surface is an excellent example of emergent evolution [Morgan 1925] in the only sense in which I can understand the phrase. Organisms do seem to have "emerged" from an inorganic world as something that we cannot refuse to call "new," though something that was implicit in previous inorganic development. Inorganic development led up to a particular condition of the earth's surface and to the presence of particular chemical elements in juxtaposition at a particular time, and organisms emerged. In essence, organisms are highly specific combinations of phenomena with which we are familiar in the sphere of physics and chemistry.

The gap between the physiological and the psychical is the next serious difficulty. One of the distinctive characters of all organisms is their power of responding to various kinds of stimuli, external or internal, the specific responses varying, of course, with the kind of organism. In physiological language, we say that the organism "perceives" the stimulus and "reacts" to it. Perception in this sense may perhaps be defined as the record in the organism of some change in its environment that disturbs a state of relative equilibrium between the two. When the response is a simple movement restoring equilibrium, it is called a "tropism," and this is the clearest prototype of all specific response. Many tropisms have been analyzed and shown to depend on physical processes inevitably set up by the stimulus in the organism, given its specific constitution and structure. When the organism possesses a differentiated structure called "a nervous system" and the series of events between the incidence of the stimulus and the movement passes through this, the process is called a "reflex." When we ourselves respond to specific stimuli, we are sometimes, though by no means always, "aware," as we say, of an *object* in our environment from which the stimulus proceeds. We are also said to "perceive" the object, but the word is then used for something more than the physiological perception of stimulus in a simple tropism, or in the elaborate series of processes (the so-called reflex, or the complicated combination of reflexes) that in an organism with a complex nervous system replaces the simple tropism. We are not necessarily psychically "aware" of a stimulus that we perceive and respond to physiologically, but we are frequently aware of an object from which stimuli proceed. Psychical awareness is physiologically conditioned by almost immeasurably complicated combinations of nervous impulses in the central nervous system of the higher mammals, and it is through this means that we synthesize the results of physiological stimuli, so that psychical awareness of objects emerges. This awareness

of objects I propose to take as the mark of the psychical since it is the foundation of what we call "knowledge." It is not too much to say that the whole of the operations of mind, including conceptual thought, consists entirely in the interplay of external and internal awarenesses.

Awareness we know primarily in ourselves; we can only infer it in others: with reasonable safety, no doubt, in our fellow human beings, with reasonable probability at least in the higher animals. As we descend the scale of life, it seems to me to be increasingly doubtful if we are justified in predicting psychical awareness of objects by the organism. With physiological perception, it is quite otherwise. We can establish by experiment the existence of physiological perception in the simplest organisms. I am not prepared to deny awareness in the amoeba; neither am I prepared to affirm it. It follows that I do not know where the psychical begins in the ascending scale of life, and I doubt if anyone can ever find out.

It is easy to postulate a psyche in all organisms—easy, and, as it seems to me, futile. The cause of our ignorance on this point I believe to be simply that the awareness of objects is our own primary knowledge, and we can only judge of it in other organisms insofar as their mental processes are similar to our own. Those of our fellow men are obviously quite similar, those of apes and monkeys and even of dogs and horses are similar enough, those of the lower mammals decidedly less so; while those of the invertebrates, for example, of the insects, if they really have what may fairly be called "mental processes," are probably so different that we can form no clear picture of them, and no conceivable experiment will enable us to do so.

Nevertheless, we cannot escape the fact of the continuity of life and organic structure with which, in its higher ranges, mental phenomena are associated. If the amoeba has no mind and the lower mammals a very rudimentary one, we must conclude that mind arose gradually and by small steps, even as the cerebral cortex with which its higher developments are certainly associated. Mind *emerged* as organisms emerged; and gradually, not suddenly. Biologically, mind is a function of the higher organisms: Genetically, it is a new phenomenon of which we cannot determine the nature in terms of anything else because our own knowledge depends entirely on its use. It is as if we could not look at the world at all, as we cannot in fact look at objects below certain dimensions, except through a microscope. If we thus required a special instrument in order to observe anything at all, we could not examine this instrument and describe its nature in terms of anything else (though we could become conscious of its existence) because we could make no observation except through it. The microscope is, as it were, permanently glued to our eyes.

We cannot doubt that what I have called physiological perception of stimuli was the antecedent of mind. When a group of such stimuli impinge on an organism together from a spatially limited differentiated region, a connected set of changes is set in the organism that are realized as connected and registered as awareness of what we call an "object" in the external world. Such a group of stimuli need not, however, arise from such a sharply limited region. We may be "aware" of spring in the whole of our surroundings—"in the air," as we say—as truly as we are aware of a tree that has just burst into leaf. The essential condition of awareness seems to be the association of stimuli. That, of course, is not an explanation; it is merely a statement about conditions.

But supposing awareness, and therefore mind, have arisen in this way, it must be quite freely conceded that when they have arisen they are something new—something *sui generis* in a sense in which physiological perception is not, something of which we cannot give a clear account in terms of anything else—the reason being, as I believe, that we cannot study awareness objectively by the methods of chemistry and physics as we *can* study physiological perception. We can only infer awareness in others by analogy with ourselves, and then use it as a datum for the study of mental processes by the methods of psychology. From the standpoint of the human observer, then, the gap between the physiological and the psychical is a gap of a different nature from that between the organic and the inorganic. I can say that I believe God would see no discontinuity between the physiological and the psychical. Such a belief means that I believe in continuity throughout the universe. That is no doubt an act of faith, in which the evidence from the relations of things comprehended is extended, illegitimately from the standpoint of pure logic, to cover conclusions about relations that are both comprehended. We cannot hope to bridge the gap between the physiological and the psychical because all our knowledge is founded on the very power we seek to interpret. Awareness is the foundation stone of mind, and mind is the instrument we have to use. We can indeed point to the continuity of the evolutionary series, we can even say that awareness must have arisen through combinations of physiological perceptions registered as wholes in the organism, but in itself it is a new thing

of which we can give no satisfying account in terms of anything else.

The development of mind depends on the progressive extension of awareness, both external and internal. The separation and multiplication of objects in the environment, by increasing sensitiveness to a greater variety of stimuli arising from them, and the increasing refinement and subtlety with which the perceptions are distinguished and combined, runs *pari passu* with the power of dealing with a more and more varied and complicated environment. Physiologically, of course, it depends on the enormously increased complexity of the cerebral cortex characteristic of the primates and preeminently of man. But by far the biggest step in the development of mind is the extension and consolidation of *internal* awareness, which leads to the consciousness of self as a sharply defined entity, a consciousness that may well exist in the apes but that reaches an immeasurably higher development in man.

The progress to self-consciousness that takes place in the young child depends at every step on increasing awareness of the material self as a separate individual in space, of the parts of the body and the sensations arising from them, most notably also on the so-called "common sensations" arising from the internal organs, generally vague in consciousness, but which contribute powerfully to the always living emotional tone associated with one's own body. All this is interpreted in terms of the aspect and responses of other human beings—by far the most important, as they are the earliest objects in the environment of the individual. First of all, the mother, who as a person is only gradually separated from her breast, which is the primary object of interest; later, the other persons who come in contact with the child, who all form standards of comparison with himself, and whose cooperation is indispensable in his development toward the adult state. The sum of their responses to the child is probably the measure of the development of his self. Whatever the inborn potentialities of the individual, they cannot develop into actualities without this perpetual commerce with other human beings, and this is the most fundamental sense in which man is a social animal. Full self-consciousness depends on and is the measure of the extension to the self of the awareness of others, who in psychoanalytic language are thus introjected into the developing mind in varying degrees.

Thus is gradually built up the empirical ego of the psychologist, highly integrated in the "normal" person, but made up of the most complex components, which may very easily become more or less dissociated. Such dissociation is present in all of us and is implicitly recognized in common language and in ordinary life when we become aware of forces within the personality that are out of harmony with the rest. In its extreme form, as is well known, dissociation may become very explicit by the splitting of the personality into two or more parts that are manifested in alternate phases, but this is a rare condition—the complete temporary capture of the field of consciousness by one set of mental components that have become separated from the rest and at the same time highly integrated. To take up a point raised by Jack Wolfenden in his paper last term [Wolfenden 1932], the concept of individual in its application to human personality certainly does *not* mean "something which cannot be divided," in the sense of analyzed; nor does it mean something that cannot be divided in the sense of showing a considerable degree of functional dissociation. The phenomena of dissociation are *not* only manifested in the alternate consciousnesses of a highly pathological individual. The human mind consists of complex aggregations of elements that show the most varied and intricate combinations and dissociations. It is true that combination and integration form the dominant motif of the human mind, as they form the dominant tendencies of the organic evolution at large; but the opposite phenomenon of dissociation is never absent, though in the normal human being it is kept within limits by the dominant integration forces. Separate mental elements that we become aware of as separate, whether as the result of dissociation or not, are often felt to be in conflict. When we speak of a conflict of elements or of forces within the mind, we are of course using a metaphor, but only such metaphor as is indispensable to the progress of psychology. If we are conscious of antagonism between two impulses in the sense that they prompt to incompatible actions, it seems to me perfectly legitimate to speak of conflict, and I do not understand the objection to such language.

I have no time, nor do I think it necessary for my present purpose, to attempt to expound, even in outline, the psychoanalytic theory of the structure of the mind. But I think it useful to call attention to a view of consciousness that I believe to be helpful. In this view, consciousness is compared to a bright light illuminating the mental constituents, as one might enter a dark room full of the most varied objects with an electric torch and shift its beam from one to another. Only one must always remember that the illuminated objects are an interwoven plexus of moving material constantly shifting and entering into new combinations according

to its own laws, so that it forms a more or less ordered system, or rather a system of systems, the parts of which are constantly acting and reacting and are sensitive not only to one another but to the beam of the searchlight of consciousness. Some of this mental material is readily accessible to the torch; some is more or less deeply hidden and difficult to focus. The aim of the psychoanalyst is to reach the hidden parts of the system with the rays of the torch, and to do this he has developed an elaborate and far from perfected technique. Not only are some parts of the system extremely difficult to reach, but some are composed of material that refuses to be sharply defined in the rays of the searchlight, itself developed in the first place to illuminate material of a very different nature—namely, the object of the external world. Thus, our knowledge of what Freud calls the unconscious, or at least of some of its parts (for it has become clear that the unconscious is not a homogeneous system), is necessarily vague and uncertain and exceedingly difficult to express in available language—itself developed for quite other uses. We are thus forced constantly to use imperfect and often unsatisfactory metaphor. Nevertheless, those of us who have given attention to these matters are convinced that the phenomena we struggle to investigate and express with these inadequate instruments are real phenomena—that they are *there* and are not mere figments of our fantasy. And recognition comes in increasing measure from many who have not given the subject any close study but who find that even our inadequate formulations do in fact correspond, often with surprising closeness, with their own experience of their own minds and of the human life they see around them.

The view of consciousness I have been trying to express clearly corresponds with the formulation "there is consciousness" rather than with "I am conscious." Jack Wolfenden said last term, in a discussion on someone else's paper, that he was prepared, if I understood him aright, to consider the formulation "there is thought" as contrasted with "I think," and in his paper he wrote that he had "some sympathy" with and "might come to accept" the view that the transcendental ego, the supposed precondition of all experience, the subject that is never object, is an abstraction—"an abstraction from a process that is continually going on—the process being the concrete fact." He then asked: "Is this process an experience? If not, what is it?" and proceeded to argue that it must be "an experience of some sort belonging to an experiencing subject." Translated into terms of the searchlight metaphor, the question would become: "Who holds the electric torch and sees and interprets what its beam reveals?" I should reply: "No one: It is simply held." I think we are here dealing with a closed logical and verbal circle. If we call the process of consciousness "experience," no doubt we must have an experiencing subject; and if we assume an experiencing subject, he must be allowed experience. For some purposes, the assumption may be necessary, but it lies outside the scheme of the mind I have been trying to expound—and some such scheme is, I think, plainly required by modern psychology. In that scheme, there is no room for the experiencing subject.

This view will doubtless be vigorously attacked from two quarters. The plain man will exclaim that it is mere nonsense to deny the existence of the self that experiences. "I know that I exist"—we cannot possibly get away from that, and the first "I" is certainly an experiencing subject, just as it is in "I know that this is what I call a chair." If modern psychology requires a scheme that excludes so obvious a reality, so much the worse for modern psychology. The metaphysician, even if he be philosophically tolerant, will politely but firmly declare that it is logically necessary to assume the existence of the subject that is never an object as the precondition of all experience and will say, as Jack [Wolfenden] said, "that to talk of the 'impossibility of experience' comes very near to making noises to which there is no thought to correspond."

To these attacks, my reply would be somewhat as follows. To the plain man I should say that his belief is naive, and that it is the business of science (and of philosophy too) to criticize naive assumptions; however certain the plain man may be of their validity, and to abandon them if good cause can be shown. If I can show that we must abandon the subjective ego when we are considering mental processes from a particular point of view, I am entitled to abandon it for that purpose. At the same time, I am perfectly content to leave the plain man at peace with his belief, which is obviously not only useful but indispensable to him in practical life, provided that he does not insist on forcing it upon me when I am engaged in psychological work. To the metaphysician, I should reply that doubtless his position is well founded within his own sphere, but that it is not in mine. If we are trying to construct a philosophy that shall embrace and reconcile all spheres of knowledge, the question must remain open. If we succeed, we shall presumably reach a formulation that will harmonize the two positions; if we fail, we shall have to be content to work separately, each with his own formulations.

Here, by way of parenthesis, I may take up the

point made by Jack Wolfenden when he said that he could not "see any necessary connection between fruitfulness and truth and barrenness and falsehood," for this is a contention that implicitly criticizes the whole argument I am compelled to use. I am by no means a whole-hogging pragmatist, and I am quite willing to admit that barren statements are not necessarily false, but I cannot accept the denial of all connections between fruitfulness and truth. Fruitful theories in my view must have *some* relative truth, simply because they enable us to discover the coherences and harmonies between phenomena that form the body of scientific knowledge. And, unlike Jack, I confess I do see every reason for supposing that a large part of the universe *is* arranged to fit the scientist's ambition (which Jack, perhaps ironically, called "admirable") to explain a great many things, at least, in terms of something else. Whether the result is or even will be Jack's conception of what would be "awfully jolly," I am afraid I cannot guess, though I may be inclined to suspect that he would be miserable except in a pluralistic universe that firmly resisted the attempt to explain anything in terms of anything else. I have said that fruitfulness is connected with *relative* truth, and I would stress the adjective. I have no idea whether there is such a thing as absolute truth. It may be that if there is, it would always be barren, though I should not care to commit myself to such a belief.

To return to our genetic series, and with it to the problem of the self: We have seen that the empirical ego, to our knowledge of which modern psychology has contributed so notably during the last 30 or 40 years, is regarded, in the light of that knowledge, as a system, or rather a system of systems whose parts can only be examined piecemeal, while some are difficult or impossible to reach. Though our moment-to-moment consciousness can only deal with one thing at a time, memory enables us to relate different elements of our minds by means of the intricate associations that have been formed between them. In this way, we build up conceptions of the most varied kind about our own minds; and some at least of these, such as the mechanistic conceptions of Freud to which I have referred, enables us with more or less success to construct a picture of the ways in which our minds work; the only possible index of their relative "truth" is their fruitfulness in this respect, the extent to which they enable us to correlate and harmonize human behavior with the corresponding mental processes of which we are or can become conscious.

My suggestion is that the dual linked conception of "experiencing subject–experiencing object" is one of these constructions, fundamental indeed for naive elementary thought—and so ingrained that we use it constantly, not only in ordinary speech but in every philosophical or scientific discussion—but useless for and quite out of harmony with the development of psychology. Because there is in the individual human being so intense a consciousness of his own unity, conditioned by his spatially limited and highly integrated organism and by his distinctness from the rest of the world, he abstracts and hypostatizes a sort of inner essence of himself that is represented as something distinct and separate from the rest of the universe, sitting apart, as it were, and experiencing everything else. To say that it is a subject that is never object is not strictly true, because it is an object, as it is a product, of thought. It only differs from other objects of thought because it has no content. It is really a hypostatization of the function of awareness of which we can give no account because this function is the essence of every mental process of which we are conscious.

I have tried to deal with two of the apparent "gaps" in what I have called the genetic series—that between the inorganic and the organic and that between the physiological and the psychical. Are there any similar gaps within the sphere belonging to the activity of the human mind? It may be suggested that the creation of values implies such a gap, and I think it does. It is clear that I have not the time tonight, even if I had the knowledge and the competence to discuss this field at any length. All I can attempt is to indicate how I should approach it from the point of view of the genetic series.

I am inclined to accept [Thomas Dewar] Weldon's formulations: that "value is a property which is really *sui generis*", that it "may attach to any aspect of the universe," that it is "not strictly abstractable from that to which it belongs," and "that it belongs to the whole and not merely to part of that which possesses it" [T. D. Weldon unpublished]. To begin with, I think we may safely say that all the values we know are human values built up in human minds in relation to the most various aspects of the universe, and we cannot conceive of values created in minds of a much lower degree of complexity than our own. Values are a new kind of attribute arising from the specific activity of the human mind, though like all the other phenomena we have been considering, they are not without antecedents. The various commonly recognized categories of values arise in connection with distinct kinds of contemplation, but they all seem to involve the common element of harmony, and I am inclined to think that a judgment of this kind is their common psychological basis.

I propose to single out the ethical judgment of good for the purpose of discussion, partly because it will be agreed, I think, that this is a very typical value and partly because Weldon is especially interested in it.

In approaching the topic of "good" in the strictly ethical sense, we cannot altogether neglect the other meanings of the word. Words may be dangerous seducers and terrible tyrants, but the connections between different things called by the same name cannot be safely ignored in the pursuit of understanding. A good tool or a good weapon clearly means one that is suited to its purpose. Everything that is useful is good in that limited sense. Here at once we have the element of harmony—harmony between means and end. A good piece of work again means a piece of work that satisfies our sense of fitness in the execution—harmony attained between means and end, and between the different parts of the work. What we mean by a good act—the single ethical judgment—is, I think, better considered after we have arrived at the sole notion of what we mean by a good man. A good man is not a man who performs a series of isolated "good" acts, but a man whose life has a certain harmony, both externally and internally, and also harmony with our ideal of virtuous life, and he must fulfil these conditions to have what is called a "good will." The will, as I understand it, is a permanent or quasi-permanent disposition of the mind depending upon—indeed springing from—the elementary impulses and directed toward definite courses of action in the external world that are intended to attain an end formulated, though often unconsciously, in reference to the needs of the personality as a whole. The will is thus an integration of the instincts and impulses that are directed to the satisfaction of single and temporary needs—that is, to single and partial ends.

It seems to me that in its fullest—that is, in its ethical significance—good applies primarily to the good man and therefore to the good will. Good acts are such as would be expected of the good man in the course of his good life. A bad man may perform a good act, but only because he is not wholly bad and his will is not unified. His good act is then an act that might have been expected rather of a good man. If the bad man is wholly bad: that is, his will is unified—perhaps an impossible conception—none of his acts could possibly be ethically good, however desirable their consequences. There is harmony within his will and conduct, but there is violent disharmony between these and our ideals of conduct.

It is obvious that the particular behavior of a good man will depend on the society of which he forms a part, unless indeed he is cut off from society altogether, either physically or spiritually: Thus, in an limited sense, we may call the hermit-saint a good man, or the man who devotes himself to the life of contemplation, because our sympathy for the development of the individual soul may lead us to tolerate his repudiation of the claims of society. But these are not typical cases. A good man's life must be in relation to some possible social ideal because man is a gregarious animal. A good Hottentot or a good North American Indian will not behave in the same way as a good Frenchman. Each society forms its own ideals of the good life according to its own nature and circumstances; and the more these are stable and sharply defined, the more straightforward the good life. That is why it is difficult to be satisfied that one is leading the good life in the modern world of the 20th century. Society is rapidly changing and with it our ideals of the good life. Our wills are consequently uncertain; what our particular behavior should be is often doubtful. Should it be oriented toward what we may believe to be the probable future or toward the particular bit of the present in which we happen to find ourselves? The conditions of the good life as a scheme are not in doubt, but the ways to carry them into practice are just now largely uncertain.

I have spoken as if all this formulation of ideals, consideration of circumstances, and consolidation of will were completely conscious and sharply defined processes. Of course, they are not: In many cases, they may scarcely be conscious at all. I would recall the metaphor of consciousness as an electric torch. The processes go on in our minds whether we observe them or not. But there is no doubt that the more we can make them conscious, the more certain and efficient our action is likely to be, for it is a psychological fact that the more clearly we are conscious of our mental processes the more they will come into harmony with one another and with the personality as a whole. The moving material reacts to the rays of the searchlight.

I have said that the particular behavior of the good man will differ according to the particular society in which he lives: It will also of course differ according to his particular personality. Equally good men within a given society lead very different lives, not only because of their immediate circumstances but because of their differing personalities. The good will is in harmony with the internal conditions of the personality as well as with those of the external world. The need of the self is first to maintain itself as intact as possible and then to aggrandize itself, to increase its power. I should deny that

any life can be called a good life in this fullest sense unless it satisfied and developed the individual.

If this is a reasonable account of the nature of will and of the good will, in what sense can we predicate its freedom? In speaking of the universe at the beginning of this paper, I said that everything acted according to its own nature and was therefore completely free; but that since it could not be conceived of as doing anything else, its action was also completely determined. But by determination we usually mean more than that the behavior of a thing is determined by its own nature: We mean that different things continually act on one another so that their interactions issue in inevitable sequence of cause and effect. It will have been gathered that in accordance with this view, and in accordance, I think, also with the evidence, I am an uncompromising determinist in psychology. I believe that every one of our actions and thoughts is completely determined, likewise the formation of our wills, and that therefore they could be predicted if our knowledge were adequate. But our wills have their own natures and act according to them, just like everything else, and in that sense therefore they are free. It may be objected, however, that human beings, at any rate, are not necessarily free. We do not say that a man is free when he is subjected to external compulsion "against his will." If there is to be any meaning in freedom its opposite—"unfreedom"—must also be possible. I agree, of course, and would suggest that the apparent contradiction arises because human beings belong to all four different planes of existence: the material, the biological, the psychical, and the ethical. A human being as an entity is not free in the material sphere (except in the sense in which everything is free, since its own nature helps to determine its fate), because his material body is acted upon by other material bodies. It behaves and reacts under external interference or compulsion according to its nature as a piece of matter, as a living organism, and as a particular human being; and for this reason the mind, which regards itself as the essence of the human entity, knows that the organism of which it is one aspect is not free because it is subject to the forces of the outer world and to those of its own body. The makeup of our minds is determined by antecedent factors—by our heredity and our early environment. But, given the particular makeup, when the mind has acquired an individuality of its own, its work is free, on the psychical plane, that is, it is internally determined, and our thought is thus felt to be free. Our minds may be, and are, *influenced* by external happenings, but the main current of processes antecedent to thought, will, and action are internal and belong to the mind.

Finally, on the ethical plane, the aspect of the mind we call the "will" is felt to be free in the degree in which it is well consolidated. Insofar as we are swayed by passion that is not felt as incorporated in the will of the personality as a whole, we know and feel that action is not free but constrained, a knowledge and feeling expressed in common language.

The naive human animal, like the naive nonhuman animal, can scarcely be said to have a will or even a mind in the sense with which we are now concerned. It has awareness, of course, but awareness mainly of the objects of its own immediate external environment to which it immediately reacts. Its internal awarenesses are vague and ill defined. We are right in calling the naive human or nonhuman animal free in its natural environment, because on its own plane it acts freely and harmoniously. It is unfettered by the inhibitions and conflicts that may interfere with the freedom of the more highly developed mind because the personality is imperfectly integrated. On this higher plane, it is only when the psychical elements determining action are incorporated in the structure of a stable will that action is felt to be free, and this feeling of freedom is due to the fact that the processes leading to the formation of the will are then internal and belong to the personality; in other words, the will is, and is felt to be, self-determined. I cannot see that there can be any other sense in which freedom has a meaning. I find it impossible to picture to myself what is meant when people say that their will is free in some sense that is incompatible with causal determination of their decisions to act by definite psychical antecedents. It is true that we do not always know what those antecedents are, but often we do, and I myself cannot escape from the necessity of assuming some such antecedents as always present. (I should be glad to learn how it is possible to avoid this necessity, if anyone is prepared to defend the thesis that it is possible. It is contended that some decisions of will are caused and others uncaused. If so, I am inclined to think that the belief arises from the fact that the immediate antecedents of the apparently uncaused are unconscious.)

Thus, I picture the realm of values, in particular the ideal of the good life, and the formation of the will to the good life, as *emerging* within the human mind, not without antecedents, but enjoying a quasi-independence when it has emerged. I say "quasi-independence" because there seems to be no such thing in the universe as complete independence. The will is certainly not independent of the mind in which it arises, and as an entity it is free, like

everything else, only to pursue its own course, to act according to its own nature. It is doubtful even if it can be said to be completely free to do anything except to pursue the good life, for only insofar as it does this is it a well-integrated entity. If it be objected that this condition is the very antithesis of freedom, I should reply that in every other sense freedom is an illusion. We *are* free in this sense when we act according to our own natures, and we do in fact *feel* free in the degree in which we are conscious of internal harmony, of the unity that, in proportion as it is attained, gives us individuality in the completest sense.

To sum up: I have tried to present, sketchily enough I fear, and with many imperfections, in very brief outline and with considerable lacunae, a view of the universe as I see it—a series of phenomena arising in temporal sequence, a series in which there are apparent gaps, but that I am constrained to believe is really a continuous series. The gaps loom large enough to us, and on the hither side of each, as we look backward down the series, there appears something new, something that we feel obliged to call *sui generis*. The first gap, between the inorganic and the organic, I have attributed to lack of knowledge, an ignorance that we may possibly, perhaps probably, never surmount, but that I do not believe is theoretically unbridgeable by human knowledge. The organism I have thus considered is a physico-chemical system, so highly specific that we cannot help calling it a new phenomenon.

The second gap, between the physiological and the psychical, I attribute to the fact that psychical awareness is the foundation of all human knowledge and the instrument through which we contemplate the external world and also our own minds. For that reason, it is impossible to understand awareness in terms of anything else, though its antecedents are clearly physiological perceptions that we can explain theoretically in terms of chemistry and physics.

The third gap, which occurs within the sphere of activity of the human mind, separates the realm of judgments of value from the rest of psychical activity. Values are now constructions of the mind of man that he may attach to any aspect of the universe. The element common to judgments of value is, I am inclined to think, though I am not sure, a judgment of harmony or of integration; and if there is a common principle in the whole course of what I understand as evolution—though the word is more than dubious application to the universal process—it seems to me to be a very old one, the progressive appearance of integrated systems, successively in the inorganic, the organic, the psychical, and finally in the intellectual, the aesthetic, and ethical spheres.

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