

## IS MAN A MECHANISM?

BY EDWARD O. SISSON

WHEN a hypothesis succeeds, it tends gradually to take on the aspect of absolute truth; men forget that it is a hypothesis at all and proceed as if it were a proven item of knowledge. This is what has happened widely in the case of the mechanistic-deterministic theory of the universe. This hypothesis may well be considered the most successful single movement in the whole history of thinking; it is the central principle of modern science, and the science which has been built upon it is lord of the thought and action of the present age. No wonder that the hypothesis itself has mastered the minds of men and become the very image of the divine in the realm of the intellect. To question its ultimate validity has become almost a sign of mental weakness, upon which the seeming-superior intelligence of the mechanist looks down with pity or contempt. Its final triumph is embodied in the designation of man himself as a mechanism: from La Mettrie's "L'Homme machine" to the present day, this doctrine has grown and spread until it pervades not only biology and psychology, but also sociology (in the broadest sense) and ethics.

It should be clear that the supreme duty of the philosopher is to question this sweeping conclusion. Never was Socratic scepticism more demanded by the situation. All the forces of intellectual fashion and etiquette,—as powerful in the life of reflective thought as elsewhere,—are on the side of the mechanistic interpretation. IF the final metaphysical dictum of mechanism is *not* true, then the present state of opinion concerning man and the universe is the supreme example in history of the *facilis descensus Averni*; its consequences might well be as terrible as Romanes apprehended them fifty years ago when he wrote:

"Never in the history of man has so terrific a calamity befallen the race as that which all who look may now behold

advancing as a deluge, black with destruction, relentless in might, uprooting our most cherished hopes, engulfing our most precious creed, and burying our highest life in mindless destruction."<sup>1</sup>

My own first proposition is that the metaphysical theory of mechanism is totally unproven, and that philosophy has no more urgent duty than to push to the furthest limits a criticism of the grounds of the theory. This is a logical undertaking of the first order, as we shall see at the outset of the inquiry itself.

Nothing could be more unwise and impractical than to underestimate or in any way depreciate the truth involved in the mechanistic theory. The first obligation, and the primary qualification, of the opponent of metaphysical mechanism is to be possessed of a reasonable comprehension of the gigantic success and validity of scientific mechanism, warm and a sincere appreciation of its beneficent achievements. Inestimable damage has been wrought to the cause of a non-mechanistic view of the universe by quasi-religious pleas which blindly attack the solid and admirable achievements of science: this is too familiar a spectacle as to need no extended treatment; the anti-evolution movement is perhaps the best example. But it is so far out on the obscurantist wing as to be of little service in orientation for us. Any sincere and hopeful attack upon metaphysical mechanism must put a whole world between its view of science and that of the typical anti-evolutionists.

More to us is the case of highly intelligent and critical minds oppressed by the same type of fears as Romanes, who have lamented rather than challenged the ravages of mechanism and have been led by their grief into false views of the beneficent results of mechanistic science. Of this type Krutsch's "Modern Temper" is a notable and brilliant example. We cannot believe that lyric utterances of this nature can avail anything in the needed inquiry.

### 1. *Terms and Concepts Involved*

We must first invite the mechanist to join in a careful, logical scrutiny of the terms and concepts involved in the problem. These are in the main two: *machine* and *mechanism*. Behind these English words are of course two classic terms, Greek *mechanē* and Latin *machina*; the Latin *machina* we may pass over as practically equivalent to English *machine*. But the Greek *mechanē*, the oldest

<sup>1</sup> *Candid Examination of Theism*, 1787, p. 51. Also quoted in *Darwin and Modern Science*, Cambridge University Press, 1909; p. 486.

of the set, carries, as we might expect, a deeply different sense, at last from our English derivatives, not only *machine*, but also *mechanism* and *mechanical*, etc. That is, *mechane* signifies any means or device by which a desired end can be achieved; it is hardly more than a way or manner of doing something. Thus it has a breadth and looseness of application far different from the hard and fast limitation of the English terms *machine* and, in its primary sense, *mechanism*. This is of vital importance in understanding the processes of thought in this field. The common idea in *mechane* and *machine* is that of purpose. But the purpose, of course, is not in the *mechane* or the *machine*: it is in the maker and user of these things. So that while *mechane* and *machine* both imply purpose, it is not their own purpose, but the purpose of the maker. That they both connote, inexorably. No purpose, no *mechane*, no *machine*. Both are *devised* to achieve an end; and such devising takes place only in what we call minds; to talk of devising means to end and in the same breath to deny mind is to talk nonsense. This is a logical crux and the discussion must hold to it. It is useless for us to talk with each other unless we are willing to mean something by our words, and to keep on meaning the same until we give fair warning of change. There are too many Humpty-Dumpty's to whom "a word means just what I want it to mean, no more and no less." When we say *mechane*, with Greeks, or *machine* with our own speech, we must mean purpose. Note that I have not said that the English word *mechanism* implies purpose. The biologist has borrowed the term to describe the operating structures of living beings, especially skeletal and muscular structures for locomotion and other movements. Biological discussion had to have a term for these structures, and it got its term in the commonest way, by adapting from the Greek. But between the time when the Greeks were still using *mechane* in their own sense and the time when the biologist adopted,—and adapted,—the term to his use, the *machine* had swum into the region of reflective thought, and the term *mechanism* was all infected with a non-Greek conception of *machine*. So biological "mechanism," which would have been a simple and innocent word to the Greeks from whom the form was borrowed, now carries a sense of machinery, of cog wheels, crankshafts, pinions, steel, iron, brass, and so on ad lib., a hard, "mechanical" feeling, quite remote from and hostile to thought and purpose.

Nothing of this sort would have been felt by a Greek accustomed to the rather genial and free word *mechane*.

Thus we come by a perfectly proper linguistic process to possess the word *mechanism*,—with the usual set of derivatives,—which is sharply different in meaning from its original, and also from the Latin parallel term *machina*; in that these terms both imply purpose in the maker or deviser, and the new English term explicitly does *not* imply purpose, is indifferent to purpose, and indeed, as time goes on, tends to be hostile to purpose. Yet at the same time all these new “mechane” terms still bear the fragrance of the old Greek *mechane*, and can avail themselves at need of the breadth and freedom of that old term. Such is the subtlety and elusiveness of language: and no inquiry into processes of thought can evade or safely deny these elusive aspects of the meanings of terms, for they presently turn out to have rigidly logical consequences. This is eminently true in the present great debate on the mechanistic interpretation of the world and Man.

We repeat then, that the common idea of *mechane* and *machine* is purpose in the mind of a maker; and that the modern terms mechanical, mechanism, mechanistic, etc., have sloughed off this idea of purpose, and retained simply an idea of operativeness or efficacy. Let us now take the next step in this simple logic of meanings: that is to see that Greek *mechane* and English *machine* differ sharply in an important aspect of their meaning, and one which concerns us materially: whereas *mechane* is any sort of means or device, if only adapted to the end and adopted for the end,—*machine* strictly means something *put together of parts*. This is certainly not true of the Greek original; probably not of the Latin form; indeed, it is quite possible that in earlier English use the word *machine* might sometimes mean something quite simple,—what we call a tool, for example. But in modern use the term *machine* rigorously implies complexity, and complexity due to the conjoining of parts, and of parts which work together to accomplish the desired end.

## 2. *Man-made Machines and Natural Mechanisms.*

The modern world is chock full of machines in this sense,—all the way from an egg-beater to a Hoe cylinder press, a Wright whirlwind engine, or a radio-compass. Whoever says machine or mechanical today is talking about all these things: he may not mean

them directly, but when his word strikes the ear-drum of his listener and reverberates in his association areas, the dim form of all these steel and brass contraptions loom in the fringe of his consciousness: certainly they are operative in his "thinking," or else all modern psychology is mad. And a logic which ignores psychology is no logic at all, but only pompous Humpty-Dumptyism. When I use a word it means what my hearer thinks in response to it, no more and no less: and if I say machine or mechanical to a twentieth century civilized man, these words inevitably make him think of Ford cars, typewriters, diamond drills, oil derricks, and so on ad libitum. This is part of the rigorous logic of machine and mechanical, and must be recognized by those who use the terms.

It is clear that this put-togetherness of the machine brings in the maker and his purpose in full strength: the machine does not put itself together: on the contrary the leading business of civilized man today is making parts of machines and "assembling" them into machines. Ford himself is the mighty Maker of all the millions of cars that bear his magic name; under him swarms a vast hierarchy of lesser makers, some with much mind, whom we call engineers, some with less mind, called mechanics, and others who need no mind, but only bodies, called laborers. And as is Ford so are the McCormicks, the Edisons, and the other great Machine-Makers. At the other end, as soon as the Makers have perfected their task and the machines stand ready in serried rowed (or any other convenient array!), the millions of users seize them and rush about in the manifold activities made possible by these modern miracles. Such is the Modern Machine Age, and poor is the intelligence that does not sense it in some degree: and it is this Age whose ghost is raised whenever the words machine and mechanical are offered and accepted in intellectual traffic.

But in all this maze of purpose and achievement, the machine itself is purposeless: it neither thinks nor feels; the machine age is the fruit of infinite purpose and intelligence, in a double sense: first it is purpose and intelligence that generate the machines, and then the machines open the way for the further expansion of purpose and intelligence. But the machine is without purpose and without intelligence; so much so that *machine-like* or *mechanical* naturally become the terms to denote activity complex enough to suggest purpose and intelligence, but in itself devoid of both. That

is the sting of a philosophical mechanism, that it implies even if it does not always assert, that man himself, being a mechanism and part and parcel of a mechanistic universe, is also devoid of purpose; or at best that his supposed purpose is but an epiphenomenon lacking all force and validity,—an illusion stretching like an immaterial veil over the hard realities of the cosmic machine.

Mark now the confusion which issues from the two sharply divers denotations of these terms: on the one hand we have the simple machine with which any child is more or less familiar, made by man, used by man for man's purposes. Never before has this fact bulked so large as now: as already pointed out, it has given our age its most fitting name and is its most conspicuous feature. On the other hand, we have the scientific concept of the whole material universe as mechanism also. Electrons and atoms and molecules, cells, tissues and organs, organisms themselves, all are studied according to mechanistic concepts and looked upon as mechanistic operations.

In the first case we know the history of the machines from the very start, and know that they emerge in response to our purposes and by virtue of our intelligence. In the second case we find the mechanisms, or at least what we call mechanisms, in action; of their origins we know nothing. Out of this ignorance perhaps as much as from any other source has arisen the concept of God, at least so far as the intellect is concerned; the "argument from design" is still the best of the logical "proofs" of the existence of a Divine Being.

So far as machines in the simple and original sense are concerned, it is clear that man is the machinist and not the machine. *Homo Faber* is a better definition of the species now than ever before. The making first of tools and now of machines is perhaps the most conspicuous expression and embodiment of man's purposive and intelligent life. The very purposelessness of the materials out of which machines are made offers the opportunity for the fullest play of the purposeiveness of man. Certainly from this angle of the problem, all the logic tends to make purpose the essence of the human factor involved: it would be a strange perversion to argue the blindness and subjection of the machine back upon the maker thereof.

Now no one would be so quick as the mechanist to deny that man is a machine made, as man's own machines are made, by a higher

being for that higher being's purposes. Yet if a mechanistic philosophy is to rest upon a solid basis of knowledge, it must have recourse to the machines we know about, our own, and not to a universe of mechanisms which is after all a postulate or rather only a working hypothesis of science. Of course comparison of man to a lawnmower or a gas engine is mere childishness: not even the lowest organic creature can be closely compared with any such put-together thing as these or any other machine. Nothing is more essential to organic life than that it is not put together and cannot be taken apart. Its organs are not mere parts, and cease to be what they are when separated from the organism. It would be more sensible to say that nothing in the material universe is more unlike a machine than is an organism. And of all organisms man is the least machine-like.

When we turn to the mechanisms, so-called, of the physicist and the biologist, we admit freely that man's body is apparently on the same general plane with the bodies of all other living creatures, and is subject to the same general laws and principles of operation as they. Flatly man is an animal: this is one of the main lights that came from Darwin's work or rather which his work made available for the mass of thinking people. If an animal is a mechanism, then in the same sense, man is a mechanism: but this is mechanism in a figurative, almost a poetic sense, far removed from the simple concept of the lawnmower or eggbeater.

### 3. *Is the World a Mechanism?*

Here we meet again the easy conversion of a laboratory hypothesis into a demonstrated proposition. It is surprising how many intelligent people just assume that the world is a vast mechanical contraption, like Huxley's imaginary clock, all wound up and going its inexorable fore-ordained way. That the physico-chemical world is just this is one of the commonest of assumptions; it is treated as a basis of solid concrete upon which to build the most imposing logical structures. Not only the mechanist but the anti-mechanist, if he is to share in the indispensable boons of science, both practical and speculative, must adopt the use of the hypothesis in enormous ranges of his thinking. So this most admirable of intellectual devices tends ceaselessly to become the most subtle enemy of a full philosophical grasp of the problem of the World-All. It is a sort of intellectual *summa jus summa injuria*.

Yet the mechanistic character of the universe is totally unproven: it is at most a brilliantly successful working device and an enticing and alluring speculation. Even in its genuine and true rôle as working device, it seems to have flaws when pushed to extreme and checked by the newest methods of precision and computation,—methods so abstruse and complicated that only an expert dare try to talk about them. How much havoc is the Heysenberg principle of indetermination to work in the extreme refinements of determinism? Will Millican's cosmic ray save the universe from the antinomy of the law of entropy?

Then there is the profound logical difficulty involved in the fact that the so-called laws of science are always based on conditions that never obtain in the concrete processes of the very nature they purport to describe: the law of falling bodies is really a law according to which no actual body ever falls; Newton's first law of motion holds "except insofar as (the body) may be compelled by impressed force to change that state;" and it is evidence that the exception is really the universal rule, so that the "law" is a useful tool of thought and computation but useless as description of nature in any form.

It is a wholesome discipline for the mechanistically inclined mind to consider the case of a profound mathematician and physicist, Charles Pearce, who sums up his universe under the title "Love, Chance, and Logic," and insists that contingency is integral to the world of nature; he even coins the name *tychism* for his theory of reality. Haldane, an expert in the stronghold of mechanism,—biochemistry,—flatly declares that the mechanistic principle falls far short of validity and efficacy.

Looked at in the full light of present-day science the universe still refuses to submit tamely to the mechanistic shackles. Clear from electrons and protons up through the hierarchy of being to man, it eludes the logic of determinism and powerfully suggests something far different. It is noteworthy that the physicist in a struggle to portray the behavior of atoms is forced to use humanistic, even sentimental terms, and say that the atomic family is satisfied or dissatisfied according to the presence or lack of its appropriate assemblage of infinitesimal members. Thus mechanism traced to its furthest limits seems to consort with something not mechanistic at all: logic refuses to decide whether mechanism or sentiment is really prior; that is then left to personal preference, and on that preference the thinking world splits.

It is hard to avoid the feeling that the physics and biology of today would be sounder in its larger implications and tendencies if they took a page from their humble predecessors,—“natural philosophy” and “natural history.” We have come far from the time when prevailing opinion agreed that “the undevout astronomer is mad”; without wishing to go back and bolster up the theological argument from the starry heavens, is it too much to wish that modern science should look up occasionally from its engrossment with microscopes and calculus? More attention to the gross facts of the world need not shut out any of the minutiae, and would be likely to lessen the tendency toward mechanistic and deterministic *ipse dixits*.

Let us turn natural philosophers or natural historians and look at the cosmos in the large. It is full of two things,—movement and variety: it is eternally going on, and that as though it had always gone on and would always go on. But the largest of all frames into which the mind of man has fitted it,—the frame of evolution,—is essentially a going from somewhere to somewhere else. Two significant formulas must be reckoned with, each the fruit of a great mind,—creative evolution and emergent evolution; whatever flaws there may be in the particulars of the work of these two thinkers the main thesis stands firm: and that thesis in no wise encourages any extreme mechanistic theory of reality. To the two men who gave us the formulas the sum of things is essentially non-mechanistic: to Bergson it is life, to Lloyd Morgan, it is spirit. In both cases there is room for Pearce’s “Love, Chance and Logic,” and that is more than can be said of a purely mechanistic theory.

The logic inherent in the once honored verse, “The undevout astronomer is mad” is still as good as it ever was, only that it has lost its specifically theological direction; it still points to elements and components beyond the present scope of human understanding. The vast swing of the infinite and the unwearied elusiveness of the infinitesimal, and the endless play of variation, mutation, shades of being, unforeseen emergencies, the eternal new in the flux of time, all tend to throw doubt upon a mechanistic metaphysics. We have no coercive proof on either side, only more or less vague indications and suggestions, and these abundantly present on both sides; we can only conclude that categorical assertion on either side would be dogmatic and presumptuous. In all this I refer to the so-called

material or non-human universe; for we must now turn to Man himself,—that is ourselves.

To the question "What is man" the first and most authoritative answer for each of us is "I am Man." I must follow the counsel of Socrates and Fichte and examine myself. Here is the source of all concepts and the significance of all terms. Vital as is the laboratory it can tell me nothing about my own essential being which contradicts my own immediate experience of that being. Obnoxious as this may sound to some ears, it is really a logical truism, for objective science when true to itself repudiates any contact with the inner data here referred to: the rigorous behaviorist would agree logically, indeed extremely, for he would declare that those inner data are nil and non-existent; and that science has no concern with such non-entity. In all of which he is right and wrong, as usual.

### 5. *What Am I?*

I, myself, am eternally the "base of all metaphysics"; the Alpha at least; whether or not the Omega also is a distant question. Here the mystics are sound and safe, and speculative thought today needs nothing so much as to listen to their voice. To drink of the doctrine of the pure spirit without being drunken is perhaps the supreme test of the metaphysician: if Emerson had written a system instead of aphorisms he might have surpassed all the rest in this achievement; in poetry Walt Whitman has actually done it.

I, myself, to myself, am "less *données immédiates de conscience*." These aboriginal gifts of experience are absolute and indefeasible: scepticism toward them is mere perversity, a form of pseudo-knowledge poised upon nothing thumbing its nose at both sound philosophy and ordinary common sense. What I am, see, hear, feel, in any and every way experience,—all this is just what it is and brooks no refutation, for the simple reason that nothing in the universe has any competence to refute it. These are Dewey's "being and havings," prior to and determinative of all knowledge. To pragmatism they are indeed not knowledge at all; but still they are more certain than any knowledge. It would be as valid terminology to say that they are knowledge *par excellence*, except perhaps for the advantage of saving the term knowledge for the great operative region of language and reasoning which is built by life and speculation upon or out of the basic gifts of the experience of the Ego.

Yet all this is sadly out of fashion in these latter days, and not without cause even if not thoroughly reasonable. So often philosophy has looked at the within and become enamored of it, and so lapsed from the clear-cut processes demanded by speculation into mere mystic adoration. And at the same time the physical sciences have made such a grand success by ignoring and forgetting their own mother-love of primary personal experience, that the philosophers have run after them and so abandoned all hope of any philosophy. One must admit that something more than nine-tenths of all intelligent people would turn gladly from Fichte or Hegel or Bradley to Darwin and Huxley and Faraday and the host of their modern followers.

Nevertheless, "though fiends and all things ill should wear the brows of grace, yet grace must still look so;" no matter how badly the Ego-philosophers have erred, the Ego is still the starting point for both life and thought: no matter where we want to go we must start from where we are: and where I am is in myself. So we may as well brave the lifted eyebrows of the arbiters of intellectual fashion, and proclaim the doctrine of the Self as "the beginning of wisdom" in speculative thought.

William James discussing Kant's categories suddenly blurted out in one of those inimitable sallies of his, "Of course we know we have no such clanking machinery inside us. "What could be a more natural utterance for the brilliant mind which first taught the world to think clearly and vividly of "the stream of thought?" His *Principales of Psychology*" is full from beginning to end of the sort of true description of the life of the Self which we are now seeking. Most vital of all is his insistence upon the totality and unity of the primary form of experience: "After discrimination, association," is the formula. His description of the infant's life as a "buzzing, blooming confusion" may suffer from his fondness for the picturesque, but it is eloquent of his sense of the unity and continuity of experience at its start.

But the adult mind does not lose this primitive unity and continuity, as one might be tempted to suppose; it does gain an ever increasing manifoldness and variegation; it gradually acquires a whole world of details and systems, but the infinite manifold is still bound up and integrated in an unbroken unity and coherence. Above all does experience refuse ever to reveal fragments, disjecta

membra, bits joined together; always fluency, totality, connectedness; there is always a way to travel from any point in the whole to any other part with coherence at every transition. This is personality: or more strictly it is this experienced unity of one's own experience, plus the postulate of other selves, that yields the concept of personality as inhering in ourselves and other beings outwardly similar to us.

It may be noted in passing that this concept of a practically infinite number of persons, each with its own world, no two of the worlds being supposably identical, is at the same time near-inconceivable and inescapable. Solipsism if feasible at all would be a happy escape from such a gigantic demand upon the mind. But of all the many solutions of the world-riddle that are logically possible, but practically objectionable, solipsism is doubtless the most hopelessly absurd.

Now if any two things in the whole range of our conception are diametrically different, this "I" and a machine or mechanism are. The machine is put together of parts, each part having an entity and possible existence of its own. In the machine proper,—the only mechanism of which we have any competent knowledge,—the parts exist prior to the machine and can survive it,—as every second-hand Ford dealer well knows. But in the "I," the whole exists first, and the "parts,"—we should have another name, such as phases or moments,—arise in and through the whole, never having any entity of their own, either before, during, or after the whole.

The pattern of mechanism is one of discontinuity and incidental contact and interaction; the pattern of the I is fluent, coherent, and genetically rather than incidentally interacting. The notable facts of sleep, and other forms of unconsciousness and of death so far as we know anything about death, not only do not mitigate this contrast, but increase it, for they are all processes totally beyond the range of behavior or machine or mechanism. To point out that so-called living mechanisms parallel these strange interludes or cessations is again to bring into relief the gap between mechanism in its true sense and even the lower forms of non-mechanistic existence.

But, it may be said, all this unity and coherence, this fluency and total entity, may be mere illusion, and if only seen clearly and acutely enough, would turn out to be mechanism, with parts too small to be perceived by our powers. This is a very triumph of

infantilism in intellectual high places: it is of a piece with "why the sea is boiling hot and whether pigs have wings." True, it can be said with words: and true also there is no coercive logic to oppose to it; all of which may be said of solipsism. The only bar to it is a practical one, just as is the case with solipsism: if we suppose these primary experiences to be illusion, then down comes every conceivable form of reliable knowledge: the mystic dictum is fulfilled and "All is Maya or illusion." Solipsism is far better than this doctrine of illusion, for solipsism does give us a coherent and understandable picture of a universe, and a simple and logically charming one, even if it is practically outrageous and abhorrent; the doctrine of illusion annihilates all firm and livable reality and plunges us logically into a waste of mist and ignorance.

There are then two senses in which we may understand anyone who declares that man is a mechanism: first, that he is essentially like one of his own machines, and this is so absurd that the mechanist himself repudiates it with all vigor. Second, that man is like natural mechanisms, and that necessarily in a figurative or symbolical sense, and this is quite harmless and poetic, unless and until accompanied by adequate specifications. In any case neither form of the mechanistic proposition in the least degree invalidates my direct and authentic sense of the fluent, coherent, unified and purposive nature of my own existence. Practically this means the continued function of the moral life and of ethics as part of philosophy.