

DETERMINISM OF FREE WILL —
THE NEW METAPHYSICS

A Strange Scientific Aberration

BY VICTOR S. YARROS

MUCH has been written and said in recent years concerning the alleged repudiation by modern science and scientific philosophy of the rigid mechanical determinism of the nineteenth century, or of the idea of an unescapable, all-pervasive Law governing Nature in all of its manifestations. According to many thinkers, the new physics has overthrown the old metaphysics and, among other revolutionary things, has restored the belief in moral freedom, or the freedom of the human will.

It scarcely needs adding that in the camps of the fundamentalist theologians and old moralists these admissions, or proclamations, have caused much rejoicing.

But are the admissions well founded? *Must* we give up the Determinism, the doctrine that law reigns throughout the Universe, and conclude that beyond a certain realm chaos marks the operations of Nature?

True, these startling assertions have been made by eminent physicists, astronomers and mathematicians — Jeans, Eddington, and others. But have they spoken on the subject in questions *as* scientists, with the precision and caution characteristic of the man of science or as speculative and pious men who leave the methods and principles of science behind them on certain occasions?

The feeling is growing in scientific circles that the so-called "principle of uncertainty," or the New Indeterminism, has had its day, and that the "revolutionary" rediscovery of free will was the product of a series of singular misconceptions, oversights and jumped-at inferences.

Let us quote the latest pronouncements of men of science on this interesting question.

Professor C. G. Darwin, grandson of the great Charles Darwin, writes as follows in his recent work on the modern conception of matter:

The facts now known regarding the atoms and electrons must revolutionize our ideas about one of the most fundamental principles which has always been accepted in science—namely, the principle of Causality. We are accustomed to take it for granted that a full knowledge of the present would enable us confidently to predict the future. When we are defeated in our attempt at prophecy we attribute it to ignorance, with the tacit assumption that, with more knowledge of the present, we could have done better. It has never occurred to us that the present is definitely unknowable.

It has been suggested that the new outlook will remove the well-known philosophical conflict between the doctrines of free will and determinism. If we are to find room for free will within the realm governed by physical science, we have to suppose that the motions of our own bodies are in some way free not to obey the inexorable commands of the older mechanics.

At first sight it might appear that the Uncertainty principle provides the necessary latitude, but this is contradicted by closer consideration. We cannot say exactly what will happen to a single electron, but we can confidently estimate the probabilities. If an experiment is carried out with a thousand electrons, what was probable for one becomes nearly a certainty. Physical theory confidently predicts that the millions of electrons in our bodies will behave even more regularly, and thus to find a case of noticeable departure from the average, we should have to wait for a time fantastically longer than the estimated age of the universe. How, then, does the Uncertainty principle help to free us from the bonds of determinism?

In physics, continues Professor Darwin, ignorance has become respectable, but it should be modest. It is, assuredly, a very poor basis for a fabric of assumptions and speculations. We do not know what a single electron will do, but we are not entitled to conclude that the universe is chaotic, especially in view of the statistical averages that are so constant. How can chaos lead so quickly to order and law?

It may be objected that Professor Darwin is not a distinguished physicist. But the authority in the realm of the exact sciences of Professor Max Planck and Professor Albert Einstein will not be questioned by any one—not even by the new, speculative and pietistic metaphysicians. Here is what these two great mathematicians and physicists have said lately in a special interview on the so-called principle of Indeterminism:

Prof. Planck: "Where the discrepancy comes today is not between nature and the principle of causality, but rather between the picture we have made of nature and the realities in nature herself. Our picture is not in perfect accord with our observation, but it is the advancing business of science to bring about a finer accord. I am convinced that the bringing about of the accord must take place not in the rejection of causality, but in a greater enlargement of the formula and a refinement of it, so as to meet modern discoveries."

Professor Einstein: "The notion of free will in inorganic nature is not merely nonsense, it is objectionable nonsense.

"Physics gives no ground whatever for this notion of indeterminacy. I am in entire agreement with our friend Planck in the stand he has taken on this principle. He admits the impossibility of applying the causality principle to the inner processes of atomic physics under the present state of affairs, but he has set himself definitely against the thesis that from this *Unbrauchbarkeit*, or inapplicability, we are to conclude that the process of causation does not exist in external reality.

"The indeterminism which belongs to quantum physics is subjective. It must be related to something, else indeterminism has no meaning, and here it is related to our own inability to follow the course of individual atoms and forecast their activities."

It is certainly a singular aberration to assert that our present inability to follow certain processes and forecast the actions of individual atoms proves that chaos exists in nature and, therefore, free will in the human body-mind! No writer has dealt with this amazing aberration more bluntly or vigorously than Professor H. A. Levy, of the Imperial College of Science and Technology. In a book entitled *The Universe of Science*, as well as in certain articles and reviews, he has analyzed the confusions and misunderstandings which have led to the formulation of the so-called principle of indeterminism. He does not spare the men of science who are responsible for this "extraordinary muddle," and for the practical mischief attributable to the revival of the free-will fallacy. We cannot quote him at length here, but his main points may be summarily stated as follows:

The mathematician mistakes *his* reality for *the* reality, his set of symbols and formulas for the Universe. He forgets that the uni-

verse of science is by no means the real universe, and that his picture is necessarily incomplete and inexact.

In the second place, there is a limit to the fineness of perception even of the best-equipped scientists when studying the structure of matter, and there is, therefore, a limit below which it becomes physically impossible to disentangle or isolate the processes that go on there.

This means that the scientist begins with a chaotic unit as his basis, and builds upward. What is chaotic to him is not necessarily chaotic intrinsically, and perhaps eventually he will be able to understand his unit better. And if he should never understand it, all he will be justified in saying is that, to him, that unit *seems* chaotic.

But in building up his universe, at every step law, not chaos, confronts him; determinacy, not indeterminacy. Without determinacy, there is no science, and there is no applied science—no art, no industry, no philosophy.

We can see now that it was a gratuitous blunder, at the start, to speak of a "principle" of uncertainty in the name of quantum physics. The term should have been "area," not principle, and the uncertainty should have been attributed to physical reasons perfectly well understood.

Bertrand Russell, in his new book, *Religion and Science*, discusses, among other problems, that of determinism versus caprice in nature. Like Professor Levy, he is convinced that the new physics, so-called, is dealing with something not *yet determinable* rather than with something actually and necessarily *indeterminate*. There is no real reason, he says, for making the assumption that the unpredictable behavior of minute particles of matter is sufficient evidence that their behavior is not determined by any cause. That assumption is wholly gratuitous and is, in many cases, inspired by wishful thinking, by the desire to infer free will in human beings from "free will" in the atom or electron. As well contend, adds Mr. Russell, that death has no causes, since we cannot predict what individuals will die within a given period and what individuals will survive. Mortality statistics prove, of course, that death has causes, and the statistical laws of quantum mechanics likewise prove that atomic behavior *is* determined by certain causes—causes as yet unknown to science.

The blunder of the mathematicians and physicists named above led to the greater and more pathetic blunder of the theologians and

metaphysicians who hastened to proclaim the vindication or triumph of free will in man. Since, the latter declared, we do not know what the individual electron will do, it follows that the human will is a law unto itself, and that our actions are determined by ourselves! Thus our moral freedom is regained and our moral responsibility restored.

But these propositions will not bear anything like a critical examination. Just what is meant by moral freedom or free will? These phrases need scientific definition. They certainly do not define themselves.

To begin with the "will," psychologists tell us that there is no independent, identifiable, authentic faculty that can be called the "will." Our action, our choice, in any given situation depends on the issue of a conflict within ourselves, a conflict of motives, desires, hopes, fears, ambitions. In the miser, for example, greed and cupidity always, or nearly always, prevail in the end, over the weaker sentiments or tendencies. In the generous, benevolent, sensitive person, the desire to help, to prevent or alleviate suffering, prevails. The coward may be ashamed of his timidity and cowardice, but he runs away; the brave man is not without fear, but he manages to control and overcome that ignoble emotion, and he faces danger with apparent calm and steadiness.

Now, why are some generous and others callous and selfish? Why are some brave and others cowardly? Such questions cannot be answered, dogmatically. But we know that behavior is socially conditioned to a very great extent, although hereditary factors are not without importance. We are born with certain potentialities, tendencies, disposition, but these can be encouraged or discouraged, curbed or developed, by environment and education. The same person may be a hero under certain circumstances and a bandit under others.

Can we predict the behavior of this or that individual? Not always, and not with absolute confidence. We never fully know *any* individual—not even ourselves. The springs of human action are not all visible. Hidden motives may come to the surface under certain stimuli. The sub-conscious may emerge into the light of day. A desire normally weak may be reënfined by some other motive, in itself also perhaps insufficient.

However, it is equally true, and equally important, that the behavior of men *en masse*, or even of large groups of men, is predictable. Practical psychology acts upon this basic fact. Advertisers, manufacturers, merchants, sales agents, directors of personnel have learned from experience to expect certain responses to certain appeals or challenges. What is true of electrons, therefore, is true of human beings—there are statistical averages that illustrate and prove the reign of law in both classes of cases.

The individual sense of moral freedom is, then, an illusion. We are not "free," but we are ignorant and uncertain, because we do not know what our ultimate decision will be in any difficult case requiring consideration from several points of view. When we hesitate and postpone a decision, we tacitly recognize our lack of freedom to act. Something in us tells us that it would be unwise or unsafe to take a final step. Time allows new motives to assert themselves. Time thus removes doubts and perplexities, and then we feel that our decision is deliberate, not likely to cause subsequent regret. At no moment were we free to act; the struggle was internal, between motives, loyalties, benefits and possible disadvantages.

Analysis of the arguments for free will shows that the fervent adherents of that theory are prompted by the apprehension that the denial of moral freedom involves the denial of the power and influence of non-material factors, and that determinism is incompatible with social and moral progress. If everything is determined beforehand, they say to themselves, then it is idle to make any appeal to reason or conscience, and attempts at guidance toward worthy standards are utterly futile. There is no escape from causality, and fatalism thus imposes itself upon all intelligent persons.

But such a line of reasoning is the product of confusion. Determinism is not another name for fatalism, and is not incompatible with moral responsibility rightly understood. An appeal to reason or to conscience is an appeal to recognized human motives and forces, and such an appeal *implies* causality, for the motive or consideration invoked may become the cause of desired effects. An appeal to a "better self" is an appeal to sentiments as real as those we associate with the worse self. Indeed, what used to be called the sense of sin is nothing but the dissatisfaction of the better self, its revolt against inferior standards. It is the sense of unworthiness, of falling short, of doing an injustice to oneself.

It is the principle for causation, of determinism, that leads us to cultivate certain habits, to establish certain institutions, to create certain conditions. We know that human nature is remarkably plastic and flexible. Adults, like children, are molded by their surroundings. They are affected by examples; they are tempted to imitate and emulate. They are restrained by fear, emboldened by evidence of success or impunity.

In short, determinism is at the root of our schools, our churches, our courts, our legislatures. Every form of propaganda assumes determinism and proves it in practice.

We have said enough to show that the fashionable talk about the alleged incongruities of modern scientific and philosophic thought is without warrant in fact. C. E. M. Joad, a British thinker of note, recently made the following remark: "While psychology, the science of mind, seems increasingly disposed to admit the existence only of the body, physics the science of matter seems increasingly disposed to postulate the reality only of mind." Surely no scientific psychologist or physicist will indorse such a loose statement as this. As already indicated modern psychology is not rash enough to dismiss the mind. It cannot separate the mind from the body nor the body from the mind. Hence the term—body-mind. Phenomena may begin as simple sensations, but they end as mental processes. Where does the translation take place? We do not know. Somehow the dance of electrons is converted into what we call an idea, a thought, a proposition. The chaos in the atom does not preclude systematic thinking, the framing of theories, the formulation of principles and laws of science, the building of synthetic philosophies.

The incongruities of modern thought are the incongruities of half-baked thought, of pseudo-science. The scientist who is aware of the nature of his particular "reality," as Professor Levy has said, falls into no paradoxical and wanton errors.

After all, as has been said again and again, the method and spirit of science are far more important than any set of theories or conclusions. The method and spirit of science forbid the man of science to indulge in sweeping generalizations or dogmatic assertions, and they forbid him even more sternly to invade fields not his own and run riot in them.

Professor Benedetto Croce holds that all errors are *moral*, and that there is no such thing as a "mistake of the head." What he

means, of course, is that all statements should be properly qualified, regarded as tentative and subject to correction. It was, therefore, a moral error, and a mischievous one, to proclaim the end of determinism and the triumph of anarchy, or of free will. Ignorance may have become, for the moment, respectable, in the words of Professor Darwin, but it is absurd to glory in our ignorance or to use it as foundation for a new metaphysics or a new theology.