

Chance and Necessity

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THIS BOOK,* originally published in France in 1970, has apparently had a tremendous impact there and in Germany, and in its English form, published the following year, it has attracted the widespread attention of reviewers in the press and on the radio. According to the dust-jacket description it is an 'intellectual achievement of the first importance'. Jacques Monod is an extremely distinguished molecular biologist and is now director of the Pasteur Institute in Paris. In 1965 he was awarded a Nobel Prize, jointly with André Lwoff and Francois Jacob, for work on the mechanism of genetic replication and protein synthesis. This coveted honour is an indication of the respect in which his scientific accomplishments are held among those best qualified to judge.

In this book Monod sets out to do two things: first, to give a brief account of the insights which have been gained into the nature of living things on the level of mechanism, specifically of the replication and synthesis of the giant molecules so vital to physiology and genetics; and second, to advance from this base to establish an all-embracing scheme for human progress. The first task, as is to be expected, he accomplishes with grace and lucidity; in the second he flounders from one misapprehension to another. It would not be very enlightening to the theological reader to list the subjects dealt with by the author in successive chapters; a better plan is to state the conclusion at which he arrives, and then to criticise in detail some of the stages by which he arrives there.

Monod's thesis is well-stated on the dust-jacket. 'In essence, all living things—including man—are the result of a purely accidental and unpredictable biochemical "situation" . . . In short, man is an accident based on *chance* and the accident is perpetuated by the *necessity* of chemical reactions.' This general thesis is of course not new; it was stated with great power and elegance by Bertrand Russell

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in his essay *A Free Man's Worship* (1903). Here it is restated in terms of recent discoveries in molecular biology, of a technical and conceptual brilliance well calculated to dazzle the layman. With such an understanding of man, the whole fabric of his accepted system of values crumbles into dust, alike whether it belongs to Marxism, or to the 'disgusting farrago of Judeo—Christian religiosity, scientific progressivism, belief in the "natural" rights of man, and utilitarian pragmatism' to which societies of the West now pay lip-service. Everything is swept away as a result of our new knowledge of living things. Monod thinks his view represents 'the *sole* conceivable hypothesis' (author's italics) about which 'nothing warrants the supposition (or the hope) that it should, or ever could, be revised'. But man, he recognises, needs values as well as knowledge; both are demanded as soon as he faces the necessity of action. Since modern knowledge has swept away the old 'animist covenant' (man's projection of spirit or mind into nature) there is nothing outside him which can impose values on him; objectively rooted values therefore just do not exist. If values are a 'must', where then are we to get them? Monod's answer is that everything depends on the fact that the one external, objective reality we are given is nature; knowledge of nature, acquired by the objective method of science, must therefore be our ultimate value, determining our behaviour as men. He calls this the 'ethic of knowledge'. He recognises that it has no intrinsic authority; it has to be established by conceptions alien to itself. Having debunked existing values Monod, in spite of all he has said about objectivity, has to appeal to a frankly subjective judgment—of the worth of knowledge—to establish his ethic. Like all human systems it fails to give an account, ultimately, of itself.

However, far from feeling this to be a weakness, Monod endeavours to make capital out of it. The ethic of knowledge, unlike 'animist' ethics (which includes Christian and Marxist ones) is not a system imposed on man from without; it is one man imposes on himself, a moral self-discipline. It is an 'austere, abstract proud ethic'; is it possible, he asks, that it could be understood and accepted? Monod thinks it is not altogether impossible. If it doesn't offer the comforting explanation of himself that man craves, it at least offers him a 'transcendent value, true knowledge . . . for man to serve from deliberate and conscious choice'. At the same time 'it is also a humanist ethic, for it respects man as the creator and repository of that transcendence'. These positive attractions 'might perhaps satisfy man's craving for something higher'. Monod ends with a flourish. The ethic of knowledge 'is the conclusion to which the search for authenticity necessarily leads. The ancient covenant is in pieces; man at last knows that he is alone in the unfeeling immensity of the universe, out of which he emerged only by chance. Neither his destiny nor his duty have been written down. The kingdom above or the darkness below: it is for him to choose'.

How does one begin to comment on a thesis like this? A call to repudiate the wisdom of the ages, as well as the convictions by which (however unthinkingly) the vast majority of men now live must needs be firmly based if it is to be taken seriously. Monod's rests on far too flimsy a foundation for this to be the case. Consider first the quite elementary question of which of the two entities, mind and matter, is to be considered ultimate. Monod pays no scrap of attention to this; he takes the materialist answer entirely for granted. The result is hardly impressive. There is a strange irony in the way he pursues his thesis: his seeking, questing mind solemnly disenfranchising itself in the effort to frame the problem of human nature in 'other than metaphysical terms'. He doesn't stop to consider that one would hardly find matter, for very obvious reasons, trying to explain *itself* in 'other than material terms'! But the irony of it all escapes him, and we are left with the undignified spectacle of a first-class mind bowing down to macromolecular idols. Thus right at the start he begs the whole question; he should at least have faced the claim, which the Bible makes explicitly in its opening verses, that mind—or spirit—is prior to matter, and as such holds the key to ultimate understanding. But to have done so would have been, surely, to greatly weaken the impact of a subsequent argument which depends more on its power to dazzle than to illumine.

What are we to make of the 'postulate of objectivity' on which the author bases so much of his case? To begin with, what does he mean by it? Two things, it seems. First that there is an external, objective nature which investigated by the methods of science gives us knowledge valid for all men; and second, that 'true' knowledge can be reached in no other way—one imagines he is thinking of knowledge of an ethical sort 'built in' to man's nature (Rom. 2: 14, 15) or based on Divine Revelation. Here Monod makes several mistakes. To take the second point first, he implies that science involves the 'systematic denial that "true" knowledge can be reached by interpreting phenomena in terms of final causes—that is to say, of purpose'. This is absurd. Science makes no such denial; it merely says, like the greengrocer referring to the music shop, 'that is none of my business'. It insists that music be excluded from among the greengrocery, which is fair enough. But it doesn't deny that music is a necessity of life. It is a good thing that there *are* other avenues to knowledge besides science; we should not know that love and heroism were ingredients of the world of men were it not so. Why then it is illegitimate to interpret the cosmos on the analogy of human affairs Monod does not say; but his assertion that scientific method involves the systematic denial of any valid interpretation in terms of purpose is quite unwarranted. In fact Monod's own analogy of the Martian engineer (discussed below) gives the lie to it. Further, there is the first point that nature is objective. We may agree; but there is a *subjective* element in all knowledge.

What are its limits? Under the influence of drugs men can see many strange things. Where does the real end and the unreal begin? Even scientific knowledge hasn't the absolute quality it once had; one talks now in informed circles, of 'observations' rather than 'facts'.

The fact is that Monod goes only as far as it suits him in his emphasis on the objectivity or givenness of nature. It is one of the basic convictions of science that phenomena are contingent and not necessary. Natural laws must be discovered empirically by observation, and they cannot be deduced on a basis of pure reason. In other words they might have been other than they are. Granted then that they are contingent: on whom or what are they contingent? Granted their givenness: who gave them? Monod's philosophy stops short here; to him the world just *is*. But the question Why? is obviously a legitimate one, and until Monod answers it effectively his defences are wide open. In a discussion on 'holism v. reductionism' he reveals the weakness of his position. 'The holists have a total lack of understanding of scientific method and of the crucial role analysis plays in it' he says. 'How far can a Martian engineer get if, trying to understand an earthly computer he refused, on principle, to dissect the machine's basic electronic components which execute the operations of propositional algebra?' True enough; but it invites the rejoinder, wouldn't the Martian engineer be even more stupid if having understood the basic electronic circuitry he were to refuse, on principle, to entertain the possibility that the machine had a designer and existed for a purpose? Yet this is precisely how Monod would have us act in face of the Universe, and of our position within it.

Monod is very inadequate on the notion of chance. In a very dogmatic passage he asserts that since accidental events are 'the *only* possible source of modification in the genetic text, itself the sole repository of the organism's hereditary structures, it necessarily follows that chance *alone* is at the source . . . of all creation. . . . Pure chance, absolutely free but blind . . . the *sole* conceivable hypothesis' (his italics). This is patently absurd. If I throw a dice, chance 'absolutely free' ensures that one sixth of the tosses produces a one. But if I *design* the dice with a suitable bias, chance, equally free, finds that it has to produce a one much more often! What has happened to its absolute freedom? The fact is that chance operates within law; and law, we are still entitled to believe, is contingent upon a lawgiver. But Monod not only makes this elementary mistake; he in fact claims finality of knowledge in a context where it is quite illegitimate. Speaking of the mutations on which the modern theory of evolution is based he remarks 'We say that these events are . . . due to chance.' This is the king-pin of his whole position. How can he be so cocksure? The materialist needs to be firmly challenged on this point; it is an assertion made far too often, and allowed to pass. In fact the only legitimate sense in which we can assert that events are random, or chance, is that

we can discern no law in them. Obviously then to be as dogmatic on this point as Monod is is to claim omniscience. On much the same grounds an observer might well decide that the firing of guidance rockets on a spacecraft was a random affair; indeed, this would be his most likely conclusion if the target was for some reason beyond his ken. This is the evolutionary biologist's situation. He sees the mutations firing, but any target of the evolutionary process is still in the future, and so beyond him. Naturally, since he can discern no law in the discharges he pronounces them random! Of course, we must not with similar dogmatism, claim the opposite; but at least we have the right to challenge this confident assertion on its own grounds. It is when we move to other grounds altogether—those of faith—that the question which observation cannot finally decide (whether there is, or isn't, a law in the happenings) is resolved for us; the Bible never hesitates on this point. 'The lot is cast into the lap' (Prov. 16: 33)—that is the purely physical situation; 'a certain man drew a bow at random' (1 Kings 22: 34, NEB) that is the situation where human volition enters: and in both the will of God *decides* the issue. Events may legitimately be described as chance, but they may be programmed by Mind nevertheless. Once that is grasped Monod's whole position collapses like a house of cards, and nothing is left of it. Its cogency is gone.

Monod's final flourish, quoted above, raises further problems. Words fly from his pen which have no substantial meaning in his philosophy. 'Moral responsibility'—to whom or to what is any response due, since the 'ethic of knowledge' is imposed by a man on himself? 'Man, the creator and repository of that transcendence'—this looks like the quart in a pint pot, and the stream rising higher than its source. 'Man could at last live authentically'—but what does the author mean by authenticity? He attempts to redefine it as acceptance of his own basic postulate (that values cannot be objectively known); but this will just not do. It is begging the whole question. Authenticity has always stood for 'the real thing'; human life is lived authentically therefore when it corresponds to the genuine article. But Monod admits no 'genuine article' for it to correspond to. 'Neither his destiny nor his duty have been written down'; there is no given pattern to which he must conform if he would be true man. Why this mad search for authenticity? On his philosophy it is a necessary consequence of mere existence; chance and necessity guarantee it. But the search for authenticity is the bandwaggon, and Monod must jump on it, or alas, he will be left behind. How much better is the gospel description of the quest: 'When he came *to himself* he said, I will arise, and go to my Father . . . and will say, I have sinned.'

Such are the thoughts that stir in one biologist's mind as he reads this extraordinary book—extraordinary not because it blazes new trails, but because it presents again as a serious thesis one which many

before have ventured to present, only to find it repudiated. For it bases its ideas on an extremely narrow sector of man's total life; it cannot 'see it steadily and see it whole'. It is true and adequate therefore only in the sense in which the old phlogiston theory of heat was true and adequate; it gives 'logical coherence' (as Monod claims) to the narrow range of things which come within its restricted purview. But 'there are more things in heaven and earth, Horatio, than are dreamt of in your philosophy', so no doubt this effort will go the way of previous similar ones. For it still remains true that 'With Thee is the fountain of life; in Thy light do we see light.' Between the kingdom above and the darkness below, as Monod puts it, we still have to choose; but the kingdom and the light are not the 'ethic of knowledge', but 'the glory of God in the face of Jesus Christ'.