

ETHICAL QUERIES ABOUT MODERN SCIENCE*

1.1. Much discussion of this general topic turns out, on closer examination, to have to do either with ethical queries about *technology*, in the sense of the practical applications of science, or, alternatively, with ethical queries about *scientism*, in the sense of a certain metaphysical or ideological interpretation of science.

1.2. Thus, for example, there are not only the specific ethical questions raised by what has been called "biological engineering," but also the more general ethical question whether technology has not created an entirely new moral and, therefore, ethical situation. Or, alternatively, there are questions about the extent to which science presupposes and enforces an essentially dehumanizing understanding of human existence and of the world of nature of which it is a part.

1.3. In both cases, the questions seem to me to be in principle understandable and appropriate. For it is arguable that technology is already implicit in the distinctive aim and structure of modern science as essentially a matter of instrumental control; and one may also claim plausibly that historically, at least, science has as often as not been closely associated with some form or other of scientific metaphysics or ideology, whether evolutionary or revolutionary in political orientation.

1.4. Nevertheless, there may be something to be gained for the purposes of the present discussion by taking "modern science" more strictly, so as to abstract both from its applications in technology and from its associations with metaphysics or ideology. So understood, modern science, I should argue, is fundamentally the human activity of so understanding the order of events in the world, natural as well as human, as to be able to control them for human good.

1.5. But this means that, as a human activity, science is a moral matter subject to moral regulation and, therefore, the proper subject of ethical queries. To be specific, it is the subject both of the more formal, logical queries of ethics (or metaethics) having to do with the exact kind of moral activity in

which it consists and of the more material ethical queries having to do with justifying it as that kind of an activity.

1.6. If one were to press the first, more formal kind of ethical queries, one would be led to speak of such things as the cause or commitment involved in the office of scientist, namely, the search for objective knowledge about the world in accordance with the understanding of "truth" implicit in the aim and structure of scientific inquiry; or the process of continual self-criticism essential to the whole undertaking of science; or, again, the loyalty of the scientist as scientist both to her or his fellow scientists and to her or his fellow human beings, which manifests itself in the concern to maintain true communication with all. In short, an analysis of "the ethos of science," or "the morality of science," would be likely to disclose that it is an activity ordered by commitment to the cause of universal objective knowledge, by conscientiousness in self-criticism, and by faithfulness in telling the truth.

1.7. In the case of the second, more material kind of ethical queries, one begins with the very questions often asked by the scientist her- or himself about the activity in which she or he engages—namely, "What is the value of all this work I do? What is the meaning of my office, or vocation, as a scientist? What is the justification of my activity?" Such questions obviously become urgent in situations in which, for whatever reasons, the value, meaning, or justification of science has become problematic.

1.8. In principle, an activity may be morally justified by appealing to the relevant moral rules or principles. Failing that, either because the relevant rules or principles conflict with one another or do not apply to the case, or because they themselves are in need of justification, another kind, or level, of justificatory argument becomes necessary. Its major premise is not any particular moral rule or principle, but rather the ultimate moral principle arguably implicit in human action as such—namely, that the "right" action or rule is the one that maximizes the realization of all relevant interests even while minimizing their frustration. This is to presuppose, naturally, that the whole elaborate apparatus of our moral language and reasoning, from single concepts like "right" and "duty" to fully developed ethical systems and theories, exists in order to make possible these two kinds, or levels, of

argument. And, analogously to the case of science, the criteria of moral reasoning, or justification, like the norms of moral action, are wholly secular and autonomous, in the sense of being standards already implied in the situation and activity of pursuing our vital interests as social beings.

1.9. The critical moral question, however, is always, "What are the relevant interests?" or "Whose interests are relevant?" And this is one point where ethical queries as well as any possible answers to them point beyond morality and ethics to faith, if not also to religion as the primary explicit conceptualization/symbolization of faith. For it is precisely from faith, or religion, that we derive "the center of value" or "the cause of loyalty" that defines the scope of relevant interests (H. Richard Niebuhr). Any interest is relevant that is itself of interest to the all-inclusive "interest in interests" (Charles Hartshorne), which is *the* center of value or *the* cause of loyalty—in a word, God. For "God," properly understood, is at once the center of value, in the sense of that for which all other things have value or are of worth, and the cause of loyalty, in the sense of that to whose own value or worth all other things contribute.

1.10. The other point at which ethical queries as well as any possible answers to them point beyond morality and ethics to faith and, possibly, religion, is the limiting question that may be asked of any strictly moral justification of any human act or rule—namely, the question as to the ultimate meaning or significance of such an act or of a life lived in accordance with such a rule. What this question asks about is not why one should act to do one thing rather than another, or live in accordance with this rule instead of that, but rather why one should act to do anything at all, or live in accordance with any moral rule whatever. The whole of moral action and reasoning presupposes some kind of positive answer to this limiting question. But, then, the same is true, at its own level, of ethics as critical reflection on morality. In this sense, or to this extent, ethical queries about modern science necessarily presuppose the queries of faith about modern science. Alternatively, the process of putting ethical queries to modern science is either incomplete and fragmentary or else it leads on to the process of putting the queries of faith to modern science.

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2.1. *Does science provide a basis for values?*

2.1.1. The critical question here, clearly, is the philosophical question, "What are values?" or, if you will, "What is properly meant by 'value'?" To this question I should want to give the kind of answer that is generally understood to constitute a relational theory of value, i.e., a theory according to which, although value is not being or a mode thereof, being and value are inseparably connected. Every being is or has a value, positive or negative, in its relations to other beings. On this theory, in other words, "value" properly means either the good-for-ness or the bad-for-ness of one being for another (H. Richard Niebuhr).

2.1.2. This means that, while value is relational and in that sense relative, the essential relativity of value is not subjective but objective. Being a relativity that consists in the relation of one being to the needs and potentialities of another, it is not the kind of relativity that consists in the relation of one being to some other being's subjective desires and preferences. Thus, for example, whether food or poison is good or bad for an animal is not relative to its desires or preferences but to its elemental need for food and its closely related need to avoid poison if it is to realize its potentialities as the animal it is.

2.1.3. But if value, although relative, is in this sense objectively rather than subjectively relative, the determination of values is a matter, not of consulting subjective desires or preferences, but of objective observation and knowledge—namely, of the relation of one being to another, of how, being the kind of being it is, it does or does not meet the needs or correspond to the potentialities of the other being. To this extent, then, science, understood as just such objective observation and knowledge of beings in their relations to one another has an important role to play in determining values, whether or not it may also be said to provide the basis for them.

2.1.4. My judgment is that there is no good reason to say anything of the kind. Although science may indeed play the important role in

determining values that I have just indicated, I fail to see that there is anything else it could do in the way of providing a basis for values. Surely, their only necessary and sufficient basis is prescientific, consisting in the incredibly complex and many-sided relations of beings to beings that is existence as such.

2.2. If science does not provide a basis for values, where is such a basis to be found?

2.2.1. The basis for values, I have averred, is to be found in the complex and many-sided relations of beings to beings that is existence itself. The reason for this is that value, either positive or negative, is always already present whenever one being with needs and potentialities is related to another being that either meets its needs and corresponds to its potentialities or else fails to do so. But since to be at all in the fullest sense of the word—in the sense of being concrete, and so either an actual entity or an existing individual—is to be in relation to others, which, therefore, are or have value, either positive or negative, being and value are inseparably connected, and the condition that must be fulfilled in order for there to be values, which we might quite properly speak of as the "basis for values," is always already fulfilled by the essentially relational, or social, nature of existence as such.

2.2.2. But if it is just here, in the social nature of existence itself, that the basis for values is to be found, it nonetheless remains true that science as the objective knowledge of existence—or to the extent, if you will, that science consists in such knowledge—has an important role to play in determining the values that are inseparable from being itself. Indeed, it is arguable that, given its essentially instrumental aim and structure, modern science is particularly well adapted to play this important role.

2.2.3. Nevertheless, the question needs to be raised whether the scientific knowledge that is not as irrelevant to values as is sometimes claimed is as adequate in providing objective knowledge of the consequences of human action empowered by modern technology as it is conventionally supposed to be. On the usual view, science has little or nothing to do with determining values, much less with providing the basis for them; and yet it

certainly provides more or less adequate knowledge of existence and of the consequences of human intervention in natural processes. But even as I have ventured to question the first part of this conventional view, I should also want to question the second part. I find the evidence clear and compelling that modern science only too often does not understand enough about the complex and many-sided relations of beings to beings to enable us to determine with confidence what the values based in existence actually are. Consequently, I should be rather more skeptical about the successes of modern science in actually determining the values of which existence itself is the basis.

2.3. *What are the implications of the debate about science and values for the autonomy of science?*

2.3.1. I take it that the first thing to be said in response to this third question is that the autonomy of science is itself a value for which science does not provide the basis, whatever its role in determining that such autonomy is indeed a value, at least for human beings with the intellectual and other needs and potentialities that are distinctively ours.

2.3.2. The other thing that should be said is that the status of the autonomy of science as a positive value is hardly in question if what is to be understood by such autonomy is the *Wertfreiheit* generally understood to be obligatory for the scientist, insofar as her or his commitment to objective knowledge entails that she or he not allow her or his own desires and preferences to intrude upon and distort either reading of the relevant evidence or reasoning about it. If what it means for science to be autonomous is that it is "value-free," in the precise sense that would be better expressed, perhaps, by speaking instead of its being "valuation-free," then, clearly, science's being thus autonomous is a well-based positive value. For consciously valuing beings such as ourselves, who both can and must live by their own subjective valuations, the objective determination of what really is or has value for themselves and others must itself be or have extraordinary positive value. For there is no other reliable way whereby one's subjective valuations may be made to correspond to the objective values, positive and negative, of human existence. The clear implication, then, of what I have to

contribute to the debate about science and values is that the autonomy of science is, as it were, a positive value of the second power, insofar as objective knowledge of beings in their relations to one another is necessary to the determination of all other human values.

*Syllabi for presentations at the Ecumenical Colloquium on the Ideological and Theological Debate about Science, 20-26 June 1977, Cambridge University.