

TRANSLATION

RELIGION AND SCIENCE IN THE MIDDLE AGES AND IN THE MODERN ERA

by YESHAYAHU LEIBOWITZ

You asked me to speak about “Religion and Science,” and I rather prefer this formulation than that appearing in the main heading, “Faith and Reason,” which would be a topic “longer than the world and wider than the sea.” I am going to dwell on one subject only, i.e. the question: are medieval discussions of the contacts and interactions between religion and science relevant to similar discussions today?

I shall state my conclusion beforehand: it is negative. This negation springs from considering two different factors, one of them historic — the basic change, which the meaning of the concept of science has undergone — and the other is the difference between two divergent possible religious attitudes towards knowledge, which existed always, and still exists.

The main and decisive difference between what was called “science” in ancient times and what we call “science” is the change which has taken place in the conception of the relation between the cognitive and evaluative elements of the knowledge of reality; or, in other words, between seeing reality and seeing its meaning. Only after

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referring to natural sciences first, I shall venture into something pertaining to the humanities and social sciences, too.

Ancient science, whose greatest figure was Aristotle and which was deepened by the Stoics, and all that emerged from it in the Middle Ages, attributed some meaning to reality which it investigated. The research itself was influenced by this supposed meaning. This was most pregnantly expressed by the concepts of “formal” and “final” causes (out of the four “causes” Aristotle postulated), which bear no meaning in the framework of the method of present scientific thought. Our natural sciences are formulated in terms of natural laws, whereas the concepts of ancient and medieval science were formulated as principles of nature. So deep is this difference, that presently dealing with scientific methodology you wonder sometimes – in spite of many important factual achievements of former eras: Did there exist any science at all, science in our sense, until the 17th century?

The conception of nature and the world through a specific meaning attributed to them made the ancient researcher look at natural data as demonstrating and expressing something, and if this meaning was not obvious and clear at first sight, science was expected to reveal it (“to save the phenomena”). Therefore there was no clear distinction in the Middle Ages between the sciences as the term is used today and the humanities, or between science and philosophy, or between science and theology. Since nature itself was understood to express something – a purpose or a meaning or a value embodied in the phenomena, natural sciences were conceived in the same way we conceive nowadays the humanities and the social sciences.

Reading the first four chapters of Maimonides’ “Book of Knowledge,” which is a summary of fifteen hundred years of thought, we do not feel any change-over from theology and philosophy to natural sciences. The worlds of the “separate intellects,” of the celestial spheres and of the (material) elements are parts of a single continuum, since spherical and elemental phenomena themselves express certain meanings, and meaning is the constitutive element of the world of “intellects.” The change that took place in the scientific outlook since the beginning of the 17th century was the introduction of the concept of the functional connections between the phenomena in the world investigated by science; and you cannot find any “meaning” in functional connections.

Our scientific outlook attaches quite a different meaning to the rule: “the world keeps its course” – different from its original meaning with the Sages or in Aristotelean science. Of course constancy and regularity in the course of the world process were known in ancient times, too, as we see from ancient, even pre-Grecian, astronomy. This constancy and regularity is expressed in Genesis 8:22 (“Sowing and harvest, heat and cold, summer and winter, day and night, will cease no more”) and since Thales they are elements of philosophical thought (= science). Yet these concepts did not derive from objective knowledge of the world, but from the meaning attributed to it: “the world keeps its course” not because this *is* its course, but because some meaning is embodied in this course and is expressed by it.

The Aristotelean-Ptolemaic notion of the celestial bodies revolving with uniform velocities in circular orbits did not reflect the observations: the observable facts, which prove all these movements to be neither circular nor uniform, were well known to the ancient Greeks. But by a tremendous intellectual effort they forced themselves to accept an astronomy contrary to their observations, in order “to save the phenomena,” since circular and uniform movement was deemed the “perfect movement.” It should be noted, that in this aspect Copernicus belongs to medieval science and is no forerunner of modern science; Kepler was a forerunner in this sense, as he looked to movement itself, and not to a “perfect movement.”

All this will be made clearer, if we consider a section of modern science in which the matter has not yet been entirely clarified and elucidated, i.e. biology.

Modern physical sciences have been successfully based on looking solely at functional relations between factual data. Only in biology there still is a deep controversy between two approaches: one which tries to base biology, too, wholly on the same fundamental, while the other insists, that life phenomena – though exhaustively portrayable in physical science categories – differ from physical phenomena by the conceptual necessity of grasping them as an expression of “Life.” Today the outstanding representatives of these two approaches are Jacques Monod and Adolf Portmann. Experimental research in biology tends gradually to refrain from dealing with the problems of life itself and to dedicate itself to the study of the mechanisms active in life. These mechanisms may be described by the functional relations between the phenomena. Yet the question remains, whether these mechanisms constitute life itself or perhaps are no more than mechanisms active in life.

We may generalize from this instance: Ancient science – which includes medieval science – did not differentiate between mechanisms functioning in nature (or in the world) and nature (or the world) itself. This is the source of the confrontation of “Faith” and “Science” in the Middle Ages: if the content and the conclusions of science concerning natural phenomena bear a specific meaning and are expressions of this meaning, then, dealing with science, we are on the same plane as dealing with Man’s stance before God, this being a meaningful matter.

No matter, whether Faith and Science are intertwined, antagonistic or partners, there is no doubt, that they meet on the same plane – that of perceiving meaning. But if Science is no more than a subject of functional relationships, which we succeeded to discover in factual data, the world it describes does not express any specific meaning. We say now: “the world keeps its course” and take it literally, and that’s all.

This is to say, that now there is no common plane for natural sciences and for those trends and spheres of human thought dealing with meaning. Our science is indifferent to values, hence its objective validity. Our science is one and uniform and common for all understanding it, and it depends in no way on their different outlooks and values.

As a matter of fact there is not today any direct confrontation between natural science and philosophy, or between natural science and history, and all the least between natural science and religion. Scientific knowledge of nature is gradually being emptied of all meaningful content. In the last generation this process reached almost its peak in physics by the revolution created by the relativity theory, which is considered by the broader lay public as a philosophical revolution but which really is no more than freeing physics from a — partly unconscious — burden of meta-physical categories, which were part of classical physics between the 17th and 19th centuries.

Relativity is not a philosophy of space and time but an inquiry into the methods of observation and measurement of space and time. It is free from philosophical assumptions, which were still embodied in Newtonian physics. Newton could still say, in a very obscure expression, that space was God's sensorium. The contemporary scientist does not deal with the quality of space and time: but he does know something, which his precedents did not know, of the problems in fixing parameters of distance and time, which appear in mathematical formulations of functional relationships investigated in physics.

This, too, may be generalized. Modern science does not bring up philosophic problems, and its progress in the sense of widening knowledge and deepening understanding of real data is expressed in its gradual and progressive liberation from any problem of discovering the meaning of reality. Hence its objectivity: it is one and common to different outlooks.

Socrates and his followers strove to free the knowledge of truth (episteme) from the different "opinions" (doxai) about truth. Modern science takes this same path in regard to the knowledge of nature.

We may ask now, is any domain remaining, which brings religion and science into contact?

In Middle Ages there was a common plane for religious and scientific thought. But today points of contact between religion and science can be found, if at all, only in the restricted domain of cognitive elements in religion, while for the vast realms of religious thought and practice — science has become indifferent.

But it may very well be doubted, whether the cognitive elements are essential to religion, and perhaps this is the most interesting topic of contemporary religious philosophy.

Does religion supply information? For medieval man this was self-evident, as he did not distinguish between information and its meaning. The meaning which he conferred upon reality was embodied in the information about the world, which he had, or believed to have. This again, may be exemplified by the problem of the movement of the celestial bodies: the concept the ancients had of this movement

did not emerge from observation or from observation-based calculations, but from their conviction, that this movement was perfect, and therefore, circular and uniform: not perfect because being circular and uniform, but being the perfect movement necessarily circular and uniform. Meaning, and meaning alone, constituted the information, while today we take from science meaningless information, and we do not have to look for informative content in religious thought.

Our source of information is science, and psychologically the information it supplies imposes itself upon the consciousness of everyone who understands it – a human being is unable not to know what he knows. But the constitutive element of religious feeling and consciousness is not the information which is derivable from religion. The essence of religion is not the information it provides but the demand put to man – to worship God. Undoubtedly this aspect of religious faith always has been the essence of Judaism, but today it may be more conspicuous than in the Middle Ages, when also informative significance was attached to religion.

While from science we obtain information concerning the nature of the world which doesn't make any difference to faith and values, the religious consciousness is focused not on the knowledge of the nature of the world (including man's own nature) but rather on the acknowledgment of the claim which man's stance before God has on him – to worship and serve God: “accepting the yoke of *Torah* and *Mitzvot*.”

These two different approaches to faith in Judaism are hinted at or symbolized – if we interpret the following quotations and do not take them literally – in the beginning passages of Maimonides' “Book of Knowledge” and of the “Shulḥan Arukh Oraḥ Ḥayyim,” respectively: “The most basic fundamental and the pillar of wisdom is *to know*, that . . .” and “Be strong as a lion, to arise every morning *to the worship of God* . . .”

To forestall any misunderstanding, we have here to emphasize that by the “knowledge” he mentions, Maimonides does not refer to scientific information but to the “knowledge of God” (in the sense of “understanding and knowing me,” Jer. 9:23). The glossator of the Shulḥan Arukh rightly understood this “knowledge” in Maimonides' “Guide of the Perplexed” (III 52).

Unlike the Middle Ages, there is today no common plane for scientific and religious thought, or, in other words, for looking at the world as it is and looking at man's obligations in it. “The world keeps its course” and something of the “course” is revealed to us by science. Truly, scientists know very well how little we do know and that every new piece of information opens before us new horizons of ignorance. But this little we know – we do know, and this content of our consciousness cannot be shaken by factors which do not spring from knowledge. But the world we grasp by scientific knowledge does not make any difference for faith, and does not mean or express anything in regard to values. What poses the problem of meaning or value for the believer is the consciousness of his stance before God.

By the way it should be noted, that what has been said in this context about religious faith equally holds for other spheres of human thought like history, psychology, sociology, etc. — which are irreconcilable with modern scientific (= of natural sciences) methods, but religion differs from them all, as it bears a normative meaning: it obliges man to worship God. As to the reductionist trends in the philosophies of science, which, similarly in the natural sciences, strive to base values and meanings on inevitable functional relations — so far they have absolutely failed. There is neither a “unified science” encompassing natural and social sciences and the humanities, nor among the natural sciences themselves, can biology be reduced to physics-chemistry.

In conclusion we may say: Man’s consciousness of his stance before God has nothing to do with his knowledge of the world, which is understood scientifically. This great idea is articulated in the mighty conclusion of Yom Kippur (Day of Atonement), the “Ne’ila” Prayer, by the verse: “and there is no pre-eminence man over beast, for all is vanity.” Man, as object of nature and object of scientific research, is part of those indifferent, functional, relationships between factors active in nature, but he acquires significance from the fact that: “from the beginning You have set apart Man by privileging him to stand before You.”

Probably the medieval religious thinker, while reciting the Yom Kippur Prayer, could not easily and wholeheartedly accept this idea that “there is no pre-eminence of man over beast.” Only the greatest believer, Maimonides, was able to extract the deepest meaning of the verse, to ascend above the “scientific knowledge” of his time to negate the conception of man as “the crown of creation” (Guide of the Perplexed, III 13-14). Most of the religious philosophers deduced from their “science” the conception, that the whole of natural reality bears some meaning, and that this meaning was — orientation towards man.

In the world of our science, man — being a natural object — and beast alike are objects of scientific research, based on a method, which excludes all reference to values and meanings, and which does not expect the scientist to discover values and meanings in the natural reality of man. If man — as a creature sensing and feeling, testing and thinking, striving and intending — is unable to cease contemplating values and meanings, he cannot apply to science, but must necessarily turn either to atheistic metaphysics or to a religious faith.

Today we have no “science” in the medieval sense, in which religion and science meet, neither in a meeting of mutual support nor in a meeting of conflict: they are entirely alien towards each other.