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EINSTEIN ON RELIGION AND SCIENCE

Frederick Ferré / Dickinson College

Einstein had both a vivid awareness of the importance of religion within his own thought and a strong conviction about the proper relation between religion and science in general. He impatiently rejected not only the supposition that religious beliefs could be deduced from science but also the popular contention that science has nothing to do with religion. "Both attitudes," he declared, "disclose a very superficial concept of science and also of religion." Instead, Einstein suggested, an important nonreciprocal relationship holds between religion and science: science is greatly dependent upon religion, but not vice versa.

We may distinguish from Einstein's various writings on the subject at least half a dozen ways in which religion contributes to the scientific enterprise, and in so doing we obtain an increasingly clear sense of what Einstein means by "religion," as well as a greater feeling for the vital religious dimension of his life and thought. One essential contribution of religion to scientific work is heuristic. There is no logically coercive path, as Einstein sees it, from the welter of factual₂ experience to the lucid and simple laws of theoretical physics.² Religious belief in the perfect order of reality spans this gap. "Speaking of the spirit that informs modern scientific investigations, I am of the opinion that all the finer speculations in the realm of science spring from a deep religious feeling, and that without such feeling they would not be fruitful."³

A second important contribution of religion is epistemic. Fully adequate thought will be holistic, and without the richness of religious insight thought will be impoverished. "Personally I find it of the highest importance to bring all the various faculties of the understanding into cooperation. By this I mean that our moral leanings and tastes, our sense of beauty and religious instincts, are all tributary forces in helping the reasoning faculty toward its highest achievements."⁴

Thirdly, Einstein emphasizes the emotional role of perceived mystery in the common origins of science, art, and religion. Since all are forms of vision, cultivating religious insight will be aiding

1. Albert Einstein, "Science and God," The Forum 83 (June, 1930): 373.

2. Einstein, "Prologue" to Where Is Science Going? by Max Planck (New York: W. W. Norton & Co., Inc., 1932), p. 10.

3. Einstein, "Science and God," op. cit., p. 373.

4. Ibid., p. 374.

scientific sensitivity.

The most beautiful thing we can experience is the mysterious. It is the source of all true art and science. He to whom this emotion is a stranger, who can no longer pause to wonder and stand rapt in awe, is as good as dead: his eyes are closed. This insight into the mystery of life, coupled though it be with fear, has also given rise to religion. To know that what is impenetrable to us really exists, manifesting itself as the highest wisdom and the most radiant beauty which our dull faculties can comprehend only in their most primitive forms--this knowledge, this feeling, is at the center of true religiousness. In this sense, and in this sense only, I belong in the ranks of devoutly religious men.

A vital motivational role, fourthly, is to be sought in the scientific quest of the soul for balance and peace. Sometimes this religious motive manifests itself through philosophy or the arts, but it expresses itself no less through the scientist's creations as well.

Human nature always has tried to form for itself a simple and synoptic image of the surrounding world. In doing this it tries to construct a picture which will give some sort of tangible expression to what the human mind sees in nature. That is what the poet does, and the painter, and the speculative philosopher and the natural philosopher, each in his own way. Within this picture he places the center of gravity of his own soul, so that he will find in it that rest and equilibrium which he cannot find within the narrow circle of his restless personal reactions to everyday life.

Fifthly, without the supportive role of religious belief, scientists could hardly be expected to sustain their lifelong toil in quest of the elusive intelligibility of things.

No one who does not appreciate the terrific exertions and, above all, the devotion without which pioneer creations in scientific thought cannot come into being, can judge the strength of the feeling out of which alone such work, turned away as it is from immediate practical life, can grow. What a deep faith in the rationality of the structure of the world and what a longing to understand even a small glimpse of the reason revealed in the world there must have been in Kepler and Newton to enable them to unravel the mechanism of the heavens in long years of lonely work!

Any one who only knows scientific research in its practical applications may easily come to a wrong interpretation of the state of mind of the men who, surrounded by skeptical contemporaries, have shown the way to

5. Albert Einstein, "What I Believe," The Forum 84 (October, 1930): 194.

6. Einstein, "Prologue," op. cit., pp. 8-9.

kindred spirits scattered over all countries in all centuries. Only those who have dedicated their lives to similar ends can have a living conception of the inspiration which gave these men the power to remain loyal to their purpose in spite of countless failures.⁷ It is the cosmic religious sense which grants this power.

Sixthly, but by no means least in Einstein's thinking, was the personal role that religious interests played in his own career. As a child, eager to find a way to transcend the crude "hopes and strivings" of human life, he developed a deep religiosity which, however, came to an abrupt end at the age of twelve. To replace it he turned to physics.

It is quite clear to me that the religious paradise of youth, which was thus lost, was a first attempt to free myself from the chains of the "merely-personal," from an existence which is dominated by wishes, hopes and primitive feelings. Out yonder there was this huge world, which exists independently of us human beings and which stands before us like a great, eternal riddle, at least partially accessible to our inspection and thinking. The contemplation of this world beckoned like a liberation, and I soon noticed that many a man whom I had learned to esteem and to admire had found inner freedom and security in devoted occupation with it.⁸

Thus quite self-consciously Einstein saw the practice of his science as a full substitute for traditional religious devotion. "The road to this paradise was not as comfortable and alluring as the road to the religious paradise; but it has proved itself as trustworthy, and I have never regretted having chosen it."

In the preceding remark Einstein was using the word "religious" to refer to what is traditionally or commonly recognized as religious; in all the other uses cited, he was referring to something much more inclusive and fundamental.⁹ The latter, it is clear, is at heart a valuational understanding of religion. As he put it: "Religion is concerned with man's attitude toward nature at large, with the establishing of ideals for the individual and communal life, and with mutual human relationship."¹⁰ Traditional religions function obviously in this way, organizing and eliciting basic values for life, but so also may poetry, painting, philosophy, and science.

If this is so, then, Einstein concluded, the influence of religion, functionally understood, upon science is not reciprocated by science upon religion. Our deepest values sustain and shape our quest

7. Albert Einstein, "Religion and Science," New York Times Magazine, (Sunday, November 9, 1930), p. 1.

8. Albert Einstein, "Autobiographical Notes," in Albert Einstein: Philosopher-Scientist, Vol. I, edited by Paul Arthur Schilpp, (N.Y.: Harper & Brothers, 1949), p. 5.

9. Loc. cit.

10. Albert Einstein, "Religion and Science: Irreconcilable?" The Christian Register 127 (June, 1948): 19.

for fact, but our understanding of fact in no way legislates for value. On this Einstein is quite insistent. Science, defined by Einstein as "methodical thinking directed toward finding regulative connections between our sensual experiences,"¹¹ is competent in dealing with the means required to reach our ends, but its role is limited to being a servant, not a master, of those ends.

Science, in the immediate, produces knowledge and, indirectly, means of action. It leads to methodical action if definite goals are set up in advance. For the function of setting up goals and passing statements of value transcends its domain. While it is true that science, to the extent of its grasp of causative connections, may reach important conclusions as to the compatibility and incompatibility of goals and evaluations, the independent and fundamental definitions regarding goals and values remain beyond science's reach.¹²

To this extent, it follows that there can be no scientific foundations for morality. "I think you are right in speaking of the moral foundations of science," Einstein replied to a persistent questioner, "but you cannot turn it around and speak of the scientific foundations of morality."¹³ In the same context he underlined the sharp contrast between the power of the value domain of religion and morality, on the one hand, to shape and inspire life, and, on the other hand, the powerlessness of science to motivate at the deepest levels.

I do not believe that a moral philosophy can ever be founded on a scientific basis. You could not, for instance, teach men to face death tomorrow in defense of scientific truth. Science has no power of that type over the human spirit. The valuation of life and all its nobler expressions can¹⁴ only come out of the soul's yearning toward its own destiny.

Finally, in arguing for the nonreciprocal relationship between religion and science, Einstein went so far as to assert that "scientific results are entirely independent from religious or moral considerations," even though "those individuals to whom we owe the great achievements of science were all of them imbued with the truly religious conviction that this universe of ours is something perfect and susceptible to the rational striving for knowledge."¹⁵ Inspiration and guidance are one thing, it appears; scientific results are an entirely different matter.

In pressing this negative thesis against the reciprocal influence of science upon religion, however, even when "religion" is broadly defined in attitudinal and valuational terms, Einstein seems to have gone too far. His own writings on the subject themselves show an

11. Loc. cit.

12. Loc. cit.

13. Einstein, "Science and God," op. cit., p. 375.

14. Ibid., p. 374.

15. Einstein, "Religion and Science: Irreconcilable?" op. cit., p. 20.

awareness of powers in science that his denials, strictly taken, would not allow. Some of these powers are positive, some negative.

On the positive side, Einstein frequently acknowledges that science may have a salubrious influence on the basic values of persons in an otherwise materialist society. Science lifts our eyes from the narrowly mundane and so influences our attitudes. "Every attempt to reduce ethics to scientific formulas must fail. Of that I am perfectly convinced. On the other hand, it is undoubtedly true that scientific study of the higher kinds and general interest in scientific theory have great value in leading men toward a worthier valuation of the things of the spirit."¹⁶ This admission still allows the distinction (which Einstein insists upon) between the content of scientific theory and the general influence of the activity of theorizing itself. Later, however, Einstein acknowledges that the content of contemporary physics, too, may be tending toward positive religious impact. Agreeing with a quotation from Max Planck, Einstein avers that:

. . . modern scientific theory is tending toward a sort of transcendental synthesis in which the scientific mind will work in harmony with man's religious instincts and sense of beauty. I agree that the picture of the physical universe presented to us by the theory of modern science is like a great painting or a great piece of music that calls forth the contemplative spirit, which is so¹⁷ marked a characteristic of religious and artistic yearning.

Negatively, as well, there is influence of the first magnitude from science to religion. Einstein's own childhood experience demonstrates the way in which intense religiosity may be redirected by the impact of science. As he relates it, the "abrupt ending" of his youthful commitment to traditional Biblical religion was due to reading popular scientific books, from which he "reached the conclusion that much in the stories of the Bible could not be true."¹⁸ More deeply, however, even than the important level of doctrine, which is always open to allegorizing interpretation in the face of factual challenge, Einstein saw the fundamental clash of science as such with the traditional religions of church and synagogue. Traditional religion, Einstein points out, has nurtured values that focus on the concept of God as intervener in human affairs or as moral judge dispensing punishments and rewards to morally responsible agents. Science, however, takes the rule of natural lawfulness with absolute seriousness, and neither traditional role for God has a place in a Weltbild in which all happens by necessity. "Intervention" by Providence, essential to the "religions of fear" (as Einstein calls them), makes no sense on the scientific vision of an absolutely determined universe. And moral praise or blame, with its attendant rewards or punishments, is equally absurd. "A God who rewards and punishes is . . . unthinkable, because man acts in accordance with an inner and outer necessity, and would, in the eyes of God, be as little

16. Einstein, "Science and God," op. cit., p. 374.

17. Op. cit., p. 378.

18. Einstein, "Autobiographical Notes," op. cit., p. 5.

responsible as an inanimate object is for the movements which it makes."¹⁹

Thus the battle of traditional religion against science can be understood. "For any one who is pervaded with the sense of causal law in all that happens, who accepts in real earnest the assumption of causality, the idea of a Being who interferes with the sequence of events in the world is absolutely impossible. Neither the religion of fear nor the social-moral religion can have any hold on him."²⁰ And since, as Einstein saw it, science as such is committed to accepting "in real earnest the assumption of causality," it is "quite natural that the churches have always fought against science and have persecuted its supporters."²¹

This battle, however, is misunderstood if it is taken as the struggle, simply, of religion as such against science. Einstein's conception of religion, as we have seen, embraces much more than its traditional institutional manifestations. The fight is really between different religions. On one side there are the vast forces of the traditional religions of fear and of morality and, on the other side, there are the small band of devotees whose commitment, as Einstein puts it, is to "cosmic religion." An examination of this last concept will help to bring the present discussion back to its starting point and to a conclusion.

As Einstein characterizes it, "cosmic religion" has four interlocking insights, each of which, we may note, follows from the vision of all things as absolutely determined. These are, first, a sense of the vanity of human desires and aims; second, a feeling for the nobility of the order of nature; third, a perception of one's individuality as an imprisonment; and, fourth, a grand intuition into the significance of all existence felt as perfect unity.²² Clearly, in retrospect, this is what Einstein was thinking about all along as he reflected, variously, on the impact of religion in his life and on science. If we now run in reverse over the six influences of religion with which we began, we can see better Einstein's meaning at each point.

It was the urge to the cosmic religion that he felt as a child, when, as he says, he turned first to traditional Judaism and then to physics in his attempts to free himself from the "chains of the 'merely personal'." It was the supportive faith in cosmic religion that saw him through the "long years of lonely work" as he, like Kepler and Newton, made his "terrific exertions" for the sake of understanding "even a small glimpse of the reason revealed in the world." It was cosmic religion, again, that provided the world picture in which his own soul's "center of gravity" could be placed, therein finding the "rest and equilibrium" that all human nature seeks. It was through the images of cosmic religion that he experienced the mysterious depths of the universe as transcendently beautiful, feeling the emotions of awe and ecstasy that were their own reward. It was thanks to the cosmic religion that Einstein felt all of his faculties bound together in

19. Einstein, "Religion and Science," op. cit., p. 1.

20. Loc. cit.

21. Loc. cit.

22. Loc. cit.

wholesome epistemic adequacy, stimulating his "reasoning faculty toward its highest achievements." And, of course, it was the heuristic role of the cosmic religion that led him to his vision of the universe as relativistic space-time manifold, complete and perfect, and that spurred him to his unalterable opposition to a finally statistical interpretation of quantum mechanics.

The depth of his rejection of any indeterministic resting place for physics can only be fully plumbed in this context. It was no mere metaphor for Einstein when he exclaimed, in his famous letter to Born, "You believe in God playing dice and I in perfect laws in the world of things existing as real objects, which I try to grasp in a wildly speculative way."²³ For Einstein, at that point, there could be no accommodation or compromise. What was at stake, in his view, was not only essential to science as such--its acceptance "in real earnest" of causality--but also, even more portentously, was fundamental to cosmic religion itself. For a man "pervaded by the sense of causal law" to agree to the scientific consensus, then, would have been apostasy to the sacred, a deadly breach of faith. As Born himself concludes: "That his opinion in this matter differs from mine is regrettable, but it is no object of logical dispute between us. It is based on different experience in our work and life."²⁴

We are left, then, with a deep appreciation for the intense religiousness of Einstein the man and the scientist, but there remain important unanswered questions. For one thing, where would Einstein--where should we--draw the boundaries between faith and reason in matters of scientific theorizing? Granting that religious insights may be essential to the scientific good, how long may an individual scientist hold out against a scientific consensus, on religious grounds, without becoming unreasonable? What happens to holism of thought and equilibrium of soul when disciplinary practice and heuristic doctrine fail to cohere? There are extensive literatures, in the philosophy of religion as well as recent work in the history of science, that become potentially useful to the work of the scientist at this point.

Moreover, not only are there manifestly other ways than Einstein's of regarding science "as such"--ways which loosen the requirement of absolute determinism as an article of faith--but also there are alternative religious intuitions into ultimate values. How can a position like Einstein's deal with the sense possessed by many religious geniuses of the enormous value of individual human life or the ultimate poignancy of historical choice? Must these value intuitions be merely denied or set aside as inferior? On what grounds and by what (non-question-begging) right are such meta-judgments to be made? Value for value, why should the joy of cosmic equilibrium be set above the joy of creative individuality? What about the beauty of mystery demands that it be impersonal? Why must the value of beauty, in any event, be taken as higher than moral goodness as providing the heuristic key to the universe? Einstein's cosmic religion may, ironically, not be large enough to weave together all the genuine

23. Einstein, cited by Max Born in Albert Einstein: Philosopher-Scientist, op. cit., p. 176.

24. Ibid., p. 177.

values of religious and moral intuitions. Adequacy to the full data of experience is no less needed in the domain of religion, where values predominate, than in that of science.

Finally, what would Einstein--what should we--say about the possibility of weighing these questions reasonably? Must we simply agree to differ? At one point, at least, Einstein seems to suggest a fideistic counsel, on which faith has no basis beyond itself. Referring to Poincaré's statement that the worth of science lies in its contemplative and not its practical aspect, Einstein said: "The latter statement is one which cannot be assessed by the judgment of the intellect. It is a question of personal taste or aesthetic feeling."²⁵ But if we were to generalize from this, there would be no recourse allowed to thoughtful criticism of alternative religious visions. No basis, therefore, for improving or enlarging one's faith could be hoped for, and each man's faith would be ultimately as undiscussable as it would be irrelevant to the facts.

Could Einstein have meant to support this position? We need not assume that he would have taken such a view, had he reflected further. It was he, after all, who taught us not to consider "wild speculation" in science to be irresponsible or beyond the powers of reason to weigh. "A theory," he wrote, "is the more impressive the greater the simplicity of its premises is, the more different kinds of things it relates, and the more extended is its area of applicability."²⁶ Perhaps Einstein's own religious theory should be assessed along those general lines, using appropriately specified criteria. If so, "cosmic religion" might be seen to have weaknesses, like any human construct. Einstein, had he been around for this, might not have been persuaded by our criticisms; his mind, after all, was too ample to be easily moved by lesser weights; but, wise seer that he was, he would probably have delighted in sharing our efforts.

²⁵. Einstein, "Science and God," op. cit., p. 378.

²⁶. Einstein, "Autobiographical Notes," op. cit., p. 33.