

Science: From the Womb of Religion

by Stanley L. Jaki

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In the late 1960s, when Sir John Templeton laid the groundwork for a prize for progress in religion, esteem for religion took on a euphoria which invited dreams reminiscent at times of psychedelic delirium. The logic that led from the honest-to-God religion through a recycled process theology to the death-of-God religious studies unfolded itself with appropriate speed while being taken for a symptom of progress. It took courage not to be overawed by theologians who by proclaiming God's demise began to play god and downplay religion properly so-called. It could not then easily be foreseen that within two short decades human progress, in fact our very physical health or survival, would seem to depend more than ever on a return to laws set by the ever-living God.

Long before the 1960s progress became increasingly identified with an enterprise, science, looked upon in many quarters as incompatible with religion. Yet, it is not for science, which today has all the know-how to eliminate hunger, that the greatest need is felt in these very scientific times. Demand for Mother Teresa, the first recipient of this prize, for her religious, and for other heroic volunteers of true love, is greater than ever.

Hunger for true love -- heroic, self-sacrificing love -- remains humankind's basic hunger. Acknowledgment of this comes on occasion even from those who earned their fame (often their fortunes, too) by preaching salvation through science. When Bertrand Russell stated at Columbia University in 1950 that Christian love or compassion was the thing most needed by modern humans, he moved revealingly close to declaring intellectual bankruptcy on his and many others' behalf. He said much more about Christian love. Although fully familiar with the enormous power of modern science, medicine and technology, he held high Christian love as the answer to human needs in the broadest sense: "If you have Christian love," he declared to a stunned audience, "you have motive for existence, a guide for action, a reason for courage, an imperative necessity for intellectual honesty."

If intellectual honesty, usually taken for a fruit of scientific method, is to be had only through Christian love, science and religion should not seem far removed from one another. In fact science is as closely related to religion, and especially to Christian religion, as a child is to the womb out of which it came forth and with full vitality.

Such a claim may appear to be beyond belief to most among the great of the Western world. Sir Winston Churchill may well represent those great figures. One reason, a very modest one, to speak of him here and now is my own indebtedness to him. Not that I ever saw him alive. He entered my personal world when, on the occasion of his death, a leading American daily carried the facsimile of the first page of the final typewritten text of one of his major war speeches. In 1965 I had already tried for ten years to cope with a throat condition that barred me from the public use of my voice whether as a priest or a professor. Writing

books remained the sole channel for communicating my thoughts, but a channel full of obstacles for anyone barred from using that natural vehicle of thought which is one's own mother tongue. The sight of that facsimile, heavily corrected in the very hand of Sir Winston, a Nobel laureate of literature, put me over a psychological barrier. From that moment on I was able to live with the fact that a perfect script is not produced at the very first try.

A far more important reason to continue with Sir Winston relates to an essay of his, written in 1931. Its actuality is suggested by its very title, "Fifty Years Hence." Indeed, it appears to be written for the 1980s, and for this very occasion. It certainly provides me with the right background for discussing my claim about the incredibly close ties of science to religion.

Those close ties were seen by Sir Winston only to the extent of admitting that "there was never a time when the inherent virtue of human beings, the hope of immortality, and the disdain of earthly powers and achievement were more necessary for the safety of the children of men." Such is a vote on behalf of religion that would readily come from many greats of Western culture. Many of them also would look at science in the way in which Sir Winston looked at it in that essay, although perhaps not with the grasp which he had about the latest in science.

The sixth sense which Sir Winston had about the best scientific advice has much to do with England's coping with the trials of an insane war. In 1931 he gave specific figures about nuclear fusion as a source of energy far superior to nuclear fission. About the promises of science he spoke with a euphoria that would be to the liking of many today. To be sure, we had not reached the stage foreseen by him where scientific food factories would produce chicken breasts and chicken legs without the need of producing entire chickens. Sir Winston voiced, however, a safe view when he contrasted the hundred years beginning with Queen Victoria as the phase of history that witnessed far more progress than all the previous centuries of recorded history taken together. He also voiced the general consensus in crediting science with that progress. Or, as he put it with his penchant for startling comparisons: "A priest from Thebes would probably have felt more at home at the Council of Trent two thousand years after Thebes had vanished than Sir Isaac Newton at a modern undergraduate physics society. "

What had happened in physics since 1931 would certainly corroborate his words. Again, even today, almost every scholar or writer would find natural that Sir Winston should hold high the novelty of science and ask not why science is so novel. Indifference to the question why science is not old, that is, why science did not arise in any of the great ancient cultures, is still that mark of cultural sophistication which it was in the early 1950s when, for instance, Einstein dismissed that question as unfathomable.

Yet the question why science did not arise in any of the great ancient cultures is one of the most important questions that can be raised about human history. Its answer is also the answer to the question why science is so novel. The answer lies hidden in Sir Winston's reference to that good old Egyptian priest whom he made to visit the Council of Trent. The opening of the Council of Trent puts us back to 1545, or two years after the publication of Copernicus's great book. There is no evidence that anything had been said there about the daring new view of the world centered on the sun. In that respect that ancient priest from Thebes may have thought that things were going in exactly the same way in 1545 as 2,000 years earlier. But at least in one, for us now trivial aspect, things, everything or anything, went on at the Council of Trent -- or at Geneva, or at Wittenberg, or at Canterbury -- in a way which would have deeply upset that priest from Thebes. In any of those famous places, or in any big and small place in Christian Europe, things went on because they were regulated by mechanical clocks.

Long before the Council of Trent, mechanical clocks began to turn into household items. In the late 13th century, very likely somewhere in England (perhaps in Salisbury), a marvelous double feedback mechanism was invented for turning the accelerating fall of a weight into a slow motion with constant velocity. From that moment on, weight-driven pendulum clocks struck the hour at the same intervals, whether in winter or summer, spring or fall, day or night. Our priest from Thebes would have found this very upsetting. In ancient Egypt, there were 12 hours to the night, 12 hours to the day, regardless of whether the night was long or the day was short. Of course, in Thebes the variations of daylight were not as

great as farther north, say in Oxford, let alone in Edinburgh. The attitude of Egyptians of old to the length of hours may seem "elastic" but in fact it was expressive of a broader rigidity. A most telling aspect of that rigidity was the oath by which each pharaoh bound himself to nip in the bud any attempt at calendar reform although it was sorely needed.

Quite different was the situation at church councils. Reform of the calendar -- discussed at Constance, Basel and Lateran IV -- became a chief topic when the Council of Trent had its last session in 1563, and a reality less than 20 years later. Copernicus, it is well to recall, wrote his book also with an eye on calendar reform. Had the Council fathers at Trent been asked to discuss his book, in at least one and very important respect they would have found that Copernicus said nothing new. In Copernicus's explanation of why falling bodies do not fall behind on a fast rotating and even faster orbiting earth, they would have recognized a very old idea that had been argued for 200 years as part of the university education everywhere in Europe. The idea was formulated in early 14th-century Sorbonne under the name of impetus theory. It is the clear anticipation of Newton's First Law on which rest his Second and Third Laws, and ultimately all that marvelous set of laws that constitute classical and modern physics. More important, this daring innovation was the fruit of a direct reflection on what is implied in that very first tenet of the Christian religion -- belief in the Maker of heaven and earth who created all out of nothing and in time.

Our dear priest from Thebes would have found this exceedingly innovating with respect to his own world view. There an absolute beginning, the very ground for the formulation of the impetus theory, was inconceivable. Not only in Egypt but in all ancient cultures -- China, India, Babylon and Greece too -- the world was looked upon as an eternal being. Worse, that being was taken for a living entity, often for an animal full of unpredictable turns and twists. This should be kept in mind in recalling another ancient pagan way of looking at the universe. If the universe was not taken for deity itself, it was taken at least for a direct emanation from divinity, whatever it was. Such is the background of Plato's, of Plutarch's and of Cicero's references to the universe as the only-begotten, *monogenes* or *unigenitus*, being.

These words immediately take us to the very core of Christian religion, the dogma about Christ as the only-begotten, *monogenes* or *unigenitus*, Son of God. On the face of it, this dogma may seem to force a choice between Christ and the universe, or between the world to come and this world, or between religion and science. But the fact, the great historical fact, still to be set forth in all its details and turned into cultural consciousness, is that science owes its very birth to that dogma. A proof of this is the provenance of the idea of a fully ordered universe, an idea indispensable for science. That idea is a bequest not from the Greeks, but from the church fathers -- Hippolytus, Irenaeus, and Athanasius in particular. As they argued that the Son in whom the Father created all was truly consubstantial or God, they also said that such a Son or Logos could create but a completely logical or fully ordered physical universe.

Sir Winston and other greats of Western civilization notwithstanding, our good priest from Thebes would have felt most uncomfortable at Trent or in other contemporary centers of Christendom where dogmas were held in high regard. In ancient Egypt only opinions were allowed. The only dogmatic phase of Egypt of old -- Akhenaton's exclusive sun worship -- was erased with all its traces immediately upon Akhenaton's death and at the instigation of priests from Thebes. Clearly, they wanted neither innovation nor those certainties which are always dogmatic if truly certain. The ancient Egyptians' engrossment with the wildest combinations of animal forms shows their preference for inconsistencies over certainties or dogmas.

Of course, not even the Greeks of old were able to give the word dogma the meaning given it by the church fathers. The new meaning stood for the conviction that truth, superhuman or supernatural as its reference point may be, must mean complete absence of contradictions and even of inconsistencies. This conviction produced the Trinitarian dogmas of Christianity and is, or rather should be, the deepest motivation of the scientific quest. Science certainly owes its only viable birth to that Christian dogmatic conviction. Viable birth is, of course, the best and most promising token of growth or progress, religious or other, together with the possibility for continual revitalization.

That at Trent the dogmas about Creator and incarnation were not taken up shows that by then they had proved themselves to be a basis on which no Christian wanted disagreement. This unshakable basis is also

the assurance today that the eventual unity of all Christians may not be a utopia. The same basis is also the token that Christendom possesses perennial perspectives that alone illuminate that birth of science which alone explains its progress.

To be sure, once science had been given that viable birth and had accumulated a sufficiently wide set of laws, that set kept expanding on its own terms. As the progressive secularization of the Western world went on, fewer and fewer scientists were thinking of theology as they were doing their science and at times their most creative science. But when they reflected on what they did, they found time and again that their work presupposed certain ideas. What those ideas were or could lead to is best summed up in a remark by Einstein who in 1950 tried to assure a close friend that he had not yet fallen into the hands of priests.

The context of that remark was the cosmology issued from the theory of general relativity. The essence of that cosmology is that through it science has achieved for the first time in its history a contradiction-free discourse about the totality of consistently interacting things, or the universe. The universe was for Einstein the finest prize which human intellect could get hold of. Although proud of having read Kant's *Critique of Pure Reason* at the age of 13, Einstein, in all appearance, never reflected on a central claim made in that book. According to that claim, the notion of the universe is a bastard product of the metaphysical cravings of the intellect. Immanuel Kant, whose chief aim was to undermine intellectual assurance about what Emmanuel (God with us) stands for, would not, however, see his predicament as entirely hopeless in today's world of science. He would be overjoyed on hearing brash young scientific talents declare and repeat: "The universe could be the last free lunch."

The ground for this global glibness is sheer mythology. Its present domination over the philosophical interpretation of science and very often over the thinking of physicists is not a new phenomenon in the history of science. Until about 100 years ago, machine and mechanism were the supreme and sacred catchwords in that mythology. For the past 50 years or so the history of exact science has been a worship of the Myth of Chance. The wonderful statistical methods of quantum mechanics are now widely believed to be able to do the greatest marvel -- to draw entire universes out of nothing by the skillful pushing of a pencil or by the clever tinkering with the keyboards of supercomputers.

Sir Isaac Newton would certainly be astonished today if present at the meeting of an undergraduate physics society. In that respect Sir Winston and other greats of our civilization would certainly be correct. But they should also remember that Sir Isaac tolerated no cheaters. At no time had counterfeiterers in the British Isles had more of the fear of the Lord in their bones than in the two decades during which Sir Isaac was director of the Mint and had the power to send to the gallows anyone tampering with the currency. I leave it to you to imagine what he would do now with those who in these days, when lunches are no longer free, claim to deliver entire universes for free, that is, out of that nothing which they are unable to take at face value.

If progress is something like a voyage, its continuation does not cease to be a function of its very starting point and of the provisions acquired there. If religion is to be an ongoing progress, its very starting point should be rethought continually. That starting point is the recognition of dependence on the Creator on the part of everything which is the universe and of which we human beings are the very voice. (I should not tax you with the mythology of extraterrestrials, often assumed to have English for their native tongue.) Recognition is, however, much more than mere cognition. Recognition is knowledge to which commitment has been added.

Commitment may, of course, come hard if too many aspects of one's behavioral pattern or lifestyle are to be reformed. Then the specter of religion may prompt one to repeat with King Lear, "that way madness lies," words hardly amounting to reasoned argument. But if one's reasons for reluctance appear to do with science, they should seem groundless. The only viable birth of science in terms of the Christian belief in creation and Incarnation, the continual falling back of creative scientists on that same matrix as it implies a specific view of the cosmos or rather the cosmological argument, the reinstatement by the best science of the reality of the universe in all its intellectual dignity, and, finally, awareness of the difference between science and a mythology equated with it--all these four points (the chief targets of my work) should give

enough confidence in the possibility of progress in mutual understanding. But that progress will come about only if humankind, increasingly bent on science, will muster more willingness to bow to God.

A bow, if it is more than a mere ritual, is always an act of humility. But so is love which seeks not its own, broods not over injuries, and always rejoices with the truth (I Cor. 13:5-6). This tremendous insight into the very depth of love comes from a perception about God ready to empty himself and take the form of a slave (Phil. 2:6-7). For such is the only love that never turns into a slavery, emotional or other. It is in that love that religion completes all the progress it is capable of. It has already done so on countless occasions, long before the advent of science, and will keep providing the only means whereby science may act not as a curse but as a blessing.

In this age of science, and in coming times to be increasingly more scientific, no claim may be more startling than the one that love rooted in religion would be around long after all science is gone. Long before science had arrived, religion also foresaw a stage where even faith and hope would cease by finding their completion in love. That stage will consist in knowing God as he is. Such is the deepest aspect of the true harmony between intellectual honesty and Christian love, between science and religion, and also the crowning phase of their progress.