

TRUTH IN SCIENCE AND TRUTH IN RELIGION: A STUDY ON RELIGIOUS LANGUAGE AND THE LANGUAGE OF SCIENCE

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Introduction

Many times we come across accounts of conflicts not only intellectual in nature but even personal between the advocates of science and the defenders of the faith. At one point, scientists used their claims to undermine the foundations of faith and of the Church; at other times, the protectors of faith did not hesitate their social and political leverage to make the lives of scientists completely miserable. Stories were told of outright persecution and intolerance when it came to new and radical ideas. The might of the Inquisition silenced the voice of reason as if to claim that the God of faith and revelation could not be the same as the God of reason.

May we invite the readers to go back to the controversy surrounding the figure of Galileo Galilei (1564-1642). The case, known for its allegedly infamous religious undertones, time and again gives fuel to the bitter attacks leveled by critics against the Church as they point out what they perceive as Her intolerance, if not ignorance as regards truth in science. While the Church apologists maintained that since the Bible is the word of God, who is the source of all truth, then it follows that what the Bible says must be true. However, Galileo, speaking for the men of science of his time, with surprising sharpness of analytic ability, pointed out:

The holy scriptures cannot err and the decrees therein contained are absolutely true and inviolable. But I should in your place have added that, though scripture cannot err, its expounders and interpreters are liable to err in many ways; and one error in particular would be most grave and most frequent, if we always stopped at the literal signification of the words.¹

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A case in point in the controversy between Galileo and the authorities of the Church is the passage from the tenth chapter of the Book of Joshua:

Then spake Joshua to the Lord in the day when the Lord delivered up the Amorites before the children of Israel, and he said in the sight of Israel, 'Sun, stand thou still upon Gibeon; and thou, Moon, in the valley of Ajalon.' And the sun stood still, and the moon stayed, until the people had avenged themselves upon their enemies. Is not this written in the book of Jasher? So the sun stood still in the midst of Heaven, and hasted not to go down about a whole day.

Galileo contended that while the theologians were the experts when dealing with matters in their own disciplines like dogma and scriptures, they were mostly unqualified to judge in matters of physical science and astronomy properly so called. More so, since the men of the cloth based their statements on, firstly, too literal interpretation of scriptures, and secondly, on a dogged subscription to a philosophical view of Aristotle on the universe, a view which was based on an inadequate and antiquated physics and astronomy prevalent during the time of the Stagirite, then it was not so much a case of religion condemning science, but of bad outmoded science condemning good science.²

Years later, a similar controversy would appear in the case of Teilhard de Chardin's adopting and advocating a Christian interpretation of Darwin's theory of evolution. Some of Teilhard de Chardin's opponents maintained that such theory and its corresponding Christian adaptation by the Jesuit thinker would go diametrically against the creation account in the Book of Genesis.³

I submit to the readers that the bone of contention between science and theology, between reason and faith can be traced to 1) the initial experience 2) the different methods adopted 3) the viewpoints of the observing subjects 4) the theories which determine the selection, analysis and interpretation of data and 5) the propositions formulated according to the peculiarities of the language proper to the proponents of those statements, that is scientific language for the men of science and, religious language for the men of faith. Thus I shall present to the readers hopefully a picture of the situation between scientific claims and dogmatic positions, between scientific language and religious discourse, then explain the sources of seeming conflict, and, finally, point out possibilities for a higher synthesis.

1. The Initial Experience

Of paramount importance to the scientist or to the man of faith for the matter is the disclosure or creative insight in the initial experience which will subsequently be put to the test. In science we have the example in the moment when Newton saw the falling apple as a matter of gravity. What countless people before him had perceived, became for Newton a new fact, and this initial experience led to the formulation of the theory of gravity which would later on be tested. Another instance of a powerful disclosure in the initial experience took place in the life of the young Galileo. It is said that when he was engaged in a series of arguments with his professor, the famous Galen, in order to cool off and brush aside the epithet of "wrangler" hurled at him by his foes, Galileo paid a visit of devotion one day to the cathedral of Pisa. This architectural beauty boasts of a very wonderfully sculptured bronze sanctuary lamp which was just replenished with oil a few moments before Galileo came in, and was swinging from side to side gently before coming to rest. He had not gone far with his prayers when a sudden thought put an end to them altogether. He saw that the swinging of the lamp, whether long or short, seemed to consume the same time, and this he proved in a rough and ready manner by using his pulse beats as a chronometer. Galileo, like Archimedes before him could have shouted "Eureka" were it not for the solemnity of the place, for he had stumbled on the isochronism of the pendulum.⁴

In religion we have also two instances of creative disclosures in the initial experience which subsequently determined the facts selected and the interpretation of those data in the light of the original experience. In the Old Testament the central point of the religious experience of Israel is Yahweh's giving of the Law to his Chosen People through Moses in the Book of Exodus, chapter X (Note: Other exegetes take the return of the Jewish people under the leadership of Zorobabel from their exile in Babylon) as the focal point of the religious experience of the Jewish people and the basis for the writing of the books of the Old Testament. In the New Testament, the Resurrection event (John 20 & 21) provides the central point for the gospel accounts as well as for the message in the other books of the New Testament.

2. The Method Adopted

Science relies heavily, albeit some scientists claim exclusively, on experimentation and the power of objective observation. Consequently, from an x number of instances that iron and copper were melted in the same container, the result is an alloy called bronze.

Likewise, from so many instances of subjecting metal to heat the conclusion arrived at is the melting of that particular material substance. Science then claims that it is solely reason, with the aid of the power of observation, that enabled this empirically-oriented discipline to arrive at the proposition "All metals, subjected to heat, melt." It is true that there are facts or data that form the basis of the scientific experience.

However, to the claim that it is through a purely rational approach to reality and a carefully guarded scrutiny of all data gathered that an objective and factual confrontation with reality is made possible, the following observations with their corresponding questions are raised:

1. What factors guided the scientist to select those particular substances and elements?
2. What added factors guided him in subjecting those substances and elements to this particular type of experimentation?
3. What reason can be brought up to corroborate the strict validity of the claim?

"All metals, when subjected to heat, melt," inasmuch as not all metals in our planet have been subjected to heat, and much less the metals in the innumerable heavenly bodies in this immense universe? And, what happens if a piece of metal, when heated, does not melt? (Principle of verification or falsification)

Due to the questions and observations which I have raised above, I venture to say that men of science invariably still go beyond the realm of strict reason and venture into the field of faith, but a faith which is not necessarily religious in nature. It is a faith that the world is there, and that this world, as an ideal, grounds the statements made on the basis of partial observation in order to give them general, if not, universal validity.⁵

Religion, in contradistinction to science, draws from and relies heavily, but not exclusively, on the dimension of faith where the exceptionally tremendous experience of "the Other" radically changes the life, influences the actions and gives substance as well as vigor to the words of the person who benefited from such an experience. While it is not quite proper and fair to subject the statements arising from faith experience to the principle of verification or falsification, yet we can claim that there is an objective, though not necessarily factual basis for such propositions made in religion. Moreover, one person's experience cannot directly become another person's experience, for an occurrence belonging to one stream of consciousness cannot be bodily transferred to another stream of consciousness. Be that as it may, still something passes from one

subject to another. Something is transferred from one stream of life to another. This something is not the experienced as experienced but its significance or its meaning. For, while the experience, as experienced and as lived, remains private, its meaning or its significance can be shared and communicated in the form of written documents.

We have then two sets of propositions, one scientific while the other is religious. Since their beginnings differ inasmuch as science relies heavily, but as I pointed out not exclusively, on reason, while religious uses faith as the main context for the dogmas adherents to that particular religion are bound to accept. It is not a faith which is purely subjective and whimsical but a faith which is grounded on and leading to a source which is the ultimate explanation for such a personal commitment and propositions as expressions of this special kind of relation. It is, to modify St. Anselm's dictum, a "*fides quaerens intelligendum aut intelligibile*." "Faith which seeks that which is understandable or is bound [one day in the near or most probably distant future] to be understood." Faith has to have some moorings that justify and, ultimately, validate such a total endorsement of oneself to the Other.

3. The Different Viewpoints of the Observers

Statements made in religion will differ from statements made in science on account of the particular attitude or viewpoint of the men of science and religion. A particular viewpoint, which may start as a theory still to be tested, determines the mind of the scientist and the theologian already at the early stage of searching for data which will confirm his initial experience. The initial theory will also influence his interpretation of the data which he selected to support his hypotheses and conclusions. It is not the actual practice that one should start from purely objective data in order to reach a theory by logical laws and methods. What actually happens is that we take up a theory, which is not yet corroborated, for the phenomena encountered to be taken up as our pertinent data. Moreover, only from a theory do questions come to our minds, questions which make data relevant. Thus, we actually start with a theory, not fully developed though it be, in our search for truth and the corresponding data to back it up.⁶

The search for truth, even in science, is not a matter of discovering-in the sense of induction from data-but of painstaking, methodical and critical investigation. One starts with a problem, and the solutions or hypotheses are a shot in the dark. Or one may call it creative discovery. The rest is a matter of having it confirmed or rebutted by sharing the conclusions reached with knowledgeable peers who will subject the data, theory, method and conclusions to a critical evaluation.⁷

The Theories Subscribed to

Once again, I submit to the reader the contention that thinkers, both in the field of science and the field of religion, have their own theories which not only determine their view of reality but also determine their selection of data deemed pertinent and the corresponding interpretation of those data. In other words, our approach to reality and how we see and talk about it flow from the theories we adhere to. Before we initiate our investigation of reality--some call it the world and the Being responsible for its existence-- we already have some structure or model which we use in ordering our collection of facts we deem to be relevant. The facts or data collected along the lines of the theory we have adopted will corroborate and, eventually, will also modify the theory which was responsible for their having been selected in the first place.

At the heart of such theories are the initial disclosures or the powerful experiences which enable the individuals, and especially the proponents of such theories to formulate their insights derived from their experiences in meaningful linguistic expressions or discourse. The disclosures and their corresponding theories take on the formal structure of models. A model which proves superior to the rest inasmuch as it is capable of explaining a greater number of facts and answering more questions than other models is what we would call a "paradigm" - a supermodel, a 'research program,' and a frame of thought within which other models can fit in and by means of which so many data can be explained into a coherent system.⁸

To serve as illustrations for the point I have just raised we have Newton's theory in physics that can explain facts and solve problems in physics within the range of our planet and its gravitational pull. However, once in space and outside the orbit of the earth, physicists have to shift to Einstein's physics which is anchored on relativity. In religion, the insistence of the Jews that they were God's specially Chosen People led them to emphasize the value of the works based on the Law, while the disclosure that salvation is a gift graciously offered to a fallen race by the Saviour who gloriously rose in victory over sin and death led Paul to preach in his Letter to the Romans, Chapter 10, "If you believe in your heart, and confess with your lips that Jesus Christ is Lord, then you will be saved." It is interesting to note that in the religious models and paradigms the individuality of the key-figures, namely Moses and Jesus Christ, plays a prominent role; moreover, more trust is required of the members in the Other who is experienced.

4A Theories in the Analysis and Interpretation of Data

Scientific research does not pick out data and facts at random but according to certain guidelines and a theoretical framework which, although not yet definite, may still be enriched as the research progresses. Moreover, the goals of research will determine the selection, analysis and interpretation of data or facts that have been gathered. Researchers come up with propositions for which they give factual basis and arguments. Data as such are not neutral; they can be value-laden, for the data a research presents are always endowed with a variety of meanings he discovers in the scientific experience he undergoes.

The influence not so much in selecting but in the interpretation is more pronounced when it comes to the realm of religion. Here we deal with experienced events that need interpretation. While we say that one's experience cannot directly become the experience of another since an event belonging to one stream of consciousness cannot be transferred as such into another stream of consciousness; yet, nevertheless, something passes from one person to another. Something is transferred from one stream of life to another, and this something is not the event experienced as experienced, but its meaning. The experience, as experienced, as one lives it, remains private. However, its meaning or sense can be discovered by others when shared.⁹ Meaning is other than the datum discovered or the event experienced. Meaning can be identified and reidentified as the same. Moreover, meanings open up a world of possibilities for the understanding of others and the self. Finally, meanings open up potential modes of existing.

Data and events can have meanings either as sense, as referent or as value to the researcher or the person who experiences the meaning. Thus, the discovery of the tremendous powers released through the fission of uranium isotopes in the hydrogen bomb revealed to the nuclear physicist, Franz Oppenheimer, the destructive intent of such an invention. It also made him eventually an avowed crusader for world peace. In the domain of religion, the resurrection event changed the lives of the apostles so radically that they no longer feared to preach the gospel in public. The encounter between the Lord and Saul while the latter was on his way to persecute the Christians in Damascus meant the complete turnaround of the feared persecutor. He became the apostle Paul. True, not all interpretations are of equal weight considering the horizon of possible meanings that have to be discovered and subsequently appropriated by the subject. It is always possible to argue for or against an interpretation, to confront interpretations, to arbitrate between them and to seek an agreement, even if this agreement remains beyond our immediate reach.¹⁰

5. Propositions Expressing Insights on Data and Events

Insights into the data and events of reality are expressed in propositions either affirming or denying the relationship between the subject and whatever predicate be attached to it. However, such linguistic expressions follow the rules of language peculiar to either science or religion to portray the world of reason or the world of faith. Science follows a descriptive pattern and function, while religion tends to be symbolic in nature and expressive in function. So, while scientific language follows a logic and function which are fundamentally descriptive, religious language takes on a pattern, basis and function that are different from the language of science. It should, therefore, not come as a surprise to note that there are variances in statements or propositions made in science from the statements made in religion. To be specific: there is a world of difference between the biblical account of God creating the world in six days and resting on the seventh from the theory of gradual evolution over a period of millions of years since the "big bang". There is also a basic difference between the statement "Mrs. Estrada went to Malacañang," and the Church' declaration: "Mary went to heaven." One describes how the Filipino nation's First Lady assumed her new and official residence, whereas the other statement is a profession of belief borne out of faith. It is also an attempt to elicit a feeling of joy and an outpouring of faith on a religious truth.

Conclusion

To the seeming contradiction that arises between statements of science and statements made in the context of faith we present the sources of misunderstanding, namely 1) the initial experience 2) the viewpoints adopted 3) the method 4) the theories used in selecting, analyzing and interpreting data or events 5) the propositions in which the insights of the corresponding experiences are formulated.

So, we would like to go back to the original controversy whose causes I would like to explain. While Galileo maintained the Copernican and Keplerian theory that the sun, not our planet, is the center of our world, that the sun moves around its own orbit and axis, and that finally this particular half-star is made of expendable elements, he, this Italian mathematician and scientist did not actually go against the insight or the proposition stated by the writer of the Book of Genesis. The latter, in his theological reflection and under the influence of Divine Inspiration, had in mind to point out that the earth, being the object of God's concern and love, since He placed mankind in it, is the center of the universe from the religious point of view.

If one is not careful in looking at scientific statements and compare them with or even oppose them to religious propositions without taking into account the shift from one paradigm to another, then he might be guilty of what Gilbert Ryle calls "categorical mistake." What is worse, he commits the grave error of what I would like to call a "paradigm mistake," since he was not aware of the shift from one linguistic model and function to another. One has to take into account that there are differences in the language games, for religious language may seem strange to the men of science. When not adequately explained or communicated religious talk can even sound nonsensical to ordinary people as an agnostic from Uganda wrote:

The things they shout I do not understand
 They shout anyhow,
 They shout like mad people.
 The padre shouts words
 You cannot understand,
 And he does not seem
 Care in the least
 Whether his hearers
 Understand him or not
 A strange language they speak

.....

And the white nuns
 Think the girls understand
 What they are saying,
 And they are annoyed
 When they laugh.¹¹

In no way do I advocate relativism when it comes to the question of truth, for I believe that truth in its absolute form, the very fountain of truth itself, does exist. However, I am also of the conviction that truth slowly unfolds or reveals itself. We just have to be patient in the meantime as we await its gradual unfolding.

I also believe that truth as perceived by science and truth in religion, while definitely not contradicting each other, will achieve a synthesis in a higher plane, and one day such synthesis will be achieved. When that time comes, men dedicated to science will work hand in hand with the men of faith who will no longer threaten them with the prospect of an Inquisition. At that future time, there will no more be Galileos or Teilhard de Chardins who would be silenced just because their findings in science do not apparently agree with the understanding, sometimes limited, of the truths of faith. Then, the glory of the Lord will truly shine as the *Lux et Veritas Aeterna*.

NOTES

1. Mary Allan Olney, *The Private Life of Galileo*, London, 1970, p. 73.
2. James Brodick S.J. *Galileo-the man, his work, his misfortunes*. 1964, p. 104.
3. P. Teilhard de Chardin. *Phenomenon of Man*, 1975.
4. James Brodick. *Galileo*, 1964, p. 16.
5. Immanuel Kant, *Prolegomena to Any Future Metaphysics*, 1783. Appendix.
6. Karl Popper, *Conjectures and Refutations, The Growth of Scientific Knowledge*, 1972, p. 24.
7. Wim de Pater. *Philosophy of Religious Language*. (Unpublished notes) 1981, p. 44.
8. H. Stachiowak. *Gedanken zu einer allgemeinen Theorie der Modelle*, 1965, p. 454.
9. P. Ricouer. *Interpretation Theory*, 1976, p. 16.
10. *Ibid.*, p. 79.
11. Okot p' Bitek. *The Song of Lavino*. Nairobi. 1968, p. 116.