

The Trouble with Believing and a Possible Way Forward ...

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Dedicated to Marie-Louise Nykamp

Abstract

As suggested by the modern view and use of the "axiomatic method" in science, a view and use which has placed belief to a very simple deep level and thus far away from the "axioms", as similar approach is suggested in religions. This would create a joint framework upon which both science and religion be based, and could pursue their development in appropriate ways, including possible useful interaction. Within such a joint framework, science would focus on those Laws of Nature which act more or less instantly, while religion would - as has always done it - focus on the Laws of Nature which need not always manifest themselves immediately.

"History is written with the feet ..."

Ex-Chairman Mao, of the Long March fame ...

“Of all things, good sense is the most fairly distributed : everyone thinks he is so well supplied with it that even those who are the hardest to satisfy in every other respect never desire more of it than they already have.” :-) :-) :-)

R Descartes, Discourse de la Méthode

“Creativity often consists of finding hidden assumptions. And removing those assumptions can open up a new set of possibilities ...”

Henry R Sturman

1. Religion and Science Are at Their Roots Both Based on Belief

This fact, possibly somewhat surprising to scientists, was described in the main thesis of [3], which is recalled here for convenience :

The customary perception of the difference between science and religion is based on a superficial view. Contrary to that view, at their very roots, both science and religion are based on certain mere sensations of truth which are not validated, and instead, are accepted upon belief as being in fact true. In the case of science, and specifically of the so called hard science, when proceeding in its further development, various rather precise and demanding validation methods are employed. As far as religion is concerned, none of such, or for that matter, other similarly rigorous validation methods are ever considered necessary, let alone made use of.

The above summarizes the essence of the difference between science and religion.

We can note that, in view of the above main thesis, there is a similarity between, on one hand, science and religion, and on other hand, science and philosophy.

2. Details on the Main Thesis

Let us start with the example of hard science offered by Mathematics, as it turns out to be simpler and clearer from the point of view of the above main thesis.

Ever since Euclid in ancient Egypt, and then truly adopted and developed in modern times, Mathematics is a collection of so called "axiomatic theories". This simply means the following. Any specific theory in Mathematics starts with a set of sentences, called "axioms", which are supposed to be true, and consequently, not any kind of proof is required, let alone, given for them. How and why such statements are chosen in a given theory in Mathematics is not important for the present purpose, and can easily be found argued in vast detail in various appropriate texts in Mathematics. Now, after choosing the "axioms", one applies usual Logic and proves various so called "theorems", which are the logical consequences of the "axioms".

Clearly, here, another crucially important component is introduced in Mathematics, and introduced without any particular validation, except upon belief, namely, usual Logic. And no matter how many reasons we may have in believing in the validity of usual Logic, the fact remains that there is no known proof about that assumed validity. And to further highlight that situation, in recent decades, Theoretical Computer Science has led to a most useful applications of other kind of Logics. Among them are a Logic which allows self-reference, while another Logic allows contradiction, or inconsistency.

This situation in Mathematics clearly shows the following fundamental fact that, indeed :

- On the level of both Axioms and Logic, one accepts things based

merely upon belief ...

As it turns out, the situation in all other hard sciences is essentially the same, except for some additional common features that are clearly illustrated in the case of Physics, which we consider here briefly.

Modern theories of Physics are in part also "axiomatic theories" in the above sense. The essential addition, when compared with Mathematics, is that the "theorems" of theories of Physics are subjected to a further, *second* validation process which is not there in the case of Mathematics. Namely, for the "theorems" of any specific theory of Physics it is only necessary - but by no means sufficient as well - that they are the logical consequences of the "axioms" of that theory. Indeed, the additional and sine-qua-non condition required is that none of such "theorems" should be contradicted even by one single "physical experiment" relevant to the branch of Physics described by the respective theory.

And in case such an experimental contradiction happens, the respective theory of Physics is placed under a question mark, if not in fact, abandoned altogether.

3. When Did the Conflict between Science and Religion Start ?

Regarding the relationship between science and religion, or in general, spirituality, it is most remarkable, although hardly ever recalled, that in ancient Greece, and even earlier, in Hindu tradition, there had not been the slightest perception about any possible conflict.

Furthermore, the same happened for quite a while in Christianity. After all, the philosophy of Plato, and even more so of Aristotle was to a large extent brought together with Christian theology.

A similar beneficial coexistence existed in Judaism, as recently for instance as the 12th century, in the works of Maimonides. Also, in its early centuries, Islam enjoyed the same kind of fruitful interaction between science and religion.

It appears, therefore, that a major conflict emerged between science and religion due to the fact that the Aristotelian view of the universe got accepted by Christianity, and specifically, by the Catholic Church, since that acceptance happened before Reformation. And according to Aristotle, Planet Earth was at the very center of the universe, with absolutely everything else out there moving around it ...

This view, needless to say, created and supported the idea of the unique and most special status of Planet Earth and of humanity ...

And then, when Copernicus and later Galileo dramatically challenged that status of Planet Earth, they did - willingly or not - challenged massively a whole lot of most fundamental church dogmas related not only to the physical structure of the universe, but also to the most important tenets of the Catholic Church ...

Not much later, with the massive development of modern science and technology, the extraordinary and ever growing practical successes of science led to a gradual and increasing diminishing of the status of religion among more educated humans, and slowly, even among many of the rest of humanity ...

It is worth noting here that Mathematics - an epitome of hard science - had been known for millennia priori to the emergence of any conflict between science and religion.

What brought that conflict about was seemingly above all the setting aside of the Aristotelian astronomy by taking away the unique status of Planet Earth.

And what further aggravated that conflict, and relegated more and more religion to a marginal status, was the fact that the new technologies based on the emerging hard sciences could deliver in the "here and now" vast amounts of "goodies", and do so quite reliably in a truly unprecedented performance which not any kind of more widely known religious or spiritual approaches would be able to come anywhere near to ...

Added to that, in all hard sciences, with the exception of Mathematics, a sine-qua-non stage in the validation of "theorems" is that they

are not supposed to fail even one single "experiment".

And any religion, or for that matter, spirituality, does of course fall significantly short of such a requirement when it comes to its effects in the "here and now" ...

Therefore, religions, and in general, spirituality started to be seen as being very very far from offering sufficiently reliable methods to deal with larger and large numbers of more and more diverse "experiments" of effective everyday importance and utility ...

4. Superficiality Causing Tragi-Comedy ...

The consequences of the superficiality mentioned in the main thesis have, so unfortunately, been far too numerous and negative ...

And due to the fact that the mentioned superficiality is still so strongly and widely ingrained, it is likely that such consequences may further occur, if not infact, get yet more aggravated ...

Needless to say, the arrogant self-righteous superiority feeling and the implied disdain for the views of the other side, if not in fact, as well for the whole human condition of the opponents, an attitude so strong and widespread with so many in both parties, can only further aggravate the situation ...

As for attempts, not a few of them lately, to ... "bring at last together science and religion" ..., they could possibly benefit from less emotionalism, more brevity, and a focus which may indeed be upon what is essential ...

As for the part of "bringing at last together", it is most important to note that, as mentioned briefly above, science and religion, and in general, science and spirituality, have in earlier times been coexisting in a mutually beneficial way ...

5. God Is Merciful ...

Well, hard sciences, and even more so Mathematics, are certainly not merciful ...

Indeed, as one knows it all too well, $1 + 1 = 2$, and there is not much one can do about it, either one likes it, or not ...

Similarly, when one happens to drive 100 km/h into a big tree, there is not much one can do about the instant deadly consequences ...

And so it comes to pass that hard sciences are about Laws of Nature which act in the here and now, and do so just about instantly ...

Religion, one may say on the other hand, is about Laws of Nature which often take their time until their action becomes manifest ...

Certainly, no known religion has as one of its commandments : "You shall obey $1 + 1 = 2$." Nor can one find a commandment like : "You shall not jump off a tall building."

Instead, one finds commandments like : "You shall respect your parents", "You shall not kill", and so on ...

And clearly, it does not necessarily happen that a disrespect of one's parents brings instant retribution ...

Not to mention that it is all too often that one gets away with murder ...

Here, therefore, we find a rather significant difference between science and religion, or in general, spirituality. A difference which in a first summary formulation we may describe as follows :

One can categorize the Laws of Nature into two classes :

- those which act instantly, and
- those which may act with some delay.

Science is mostly about the first kind of laws, while religions or spirituality are about the second kind.

However, whatever the conflict between science, and on the other hand, religion or spirituality may be, or for that matter, may be caused by, it is not in the above difference ...

6. You Show the Fool the Moon ...

A famous Zen-Buddhist saying goes as follows :

”You show the fool the Moon, and he is looking at your finger ...”

And in fact, the above often proves to be but a rather generous and optimistic formulation of the frequent far worse case when :

”You show the fool the Moon, and he is looking at his own dirty toe ...”

But let us not get ahead of the argument ...

The ”axiomatic method”, as first introduced in Geometry by Euclid more than two millennia ago, has undergone in modern times a major deepening and extension in the understanding of its essence, and consequently, in its use as well. And that evolution has, of course, been manifested not only in mathematics, but as well in hard sciences in general.

Briefly, the story goes as follows.

The statements of Geometry which Euclid took as ”axioms”, thus accepted them without absolutely any proof, were such as to be so self-evident that no reasonable person could be expected not to admit them. For instance, one of such ”axioms” was that : ”Given two different points in a plane, there is always one and only one straight line which passes through them.”

In other words, Euclid believed that there should be a clear reason why to believe in ”axioms” ...

Well, in modern times, with the proliferation of "axiomatic theories" both in Mathematics and other hard sciences, the ancient Euclidean formula of :

"believing in having to have a reason to believe"

was simply set aside nearly in its entirety. Namely, the ancient and traditional role - actually, no less than a double one - of "belief" was completely eliminated. As for the role of "reason", it was considerably reduced. Indeed, nowadays it is quite clear that one can start an "axiomatic theory" with absolutely any kind of axioms. And usually, there are only the following two conditions required :

- the "axioms" should be *consistent*, or in other words, *non-contradictory*, which means that they should not lead logically to "theorems" which contradict one another,
- the "axiomatic theory" developed from the respective "axioms" should have some interest in science or in applications, that being the "reason" for the respective choice of the "axioms".

It follows that the original ancient method of starting with unvalidated "mere sensations of truth", which in the case of Euclid were the "axioms", has in our times moved altogether to a deeper and more general level. Namely, this time our unvalidated yet accepted "mere sensation of truth" is that - for lack of any known better alternative - we should approach the realms aimed by science with "axiomatic theories", where the "axioms" are by now chosen freely and upon mere convenience, be that a theoretical or an applicative one.

And clearly, this approach is not about any "belief", being but an eminently practical one, under the circumstances ...

It turns out that, as far as the use of the "axiomatic method" in modern science is concerned, the regrettable situation in the above Zen-Buddhist saying has been overcome. Indeed, it is precisely in the free choice of axioms mentioned above that "axiomatic theories" are no longer seen as any kind of a "Moon", but only and only as certain "fingers" pointing to the "Moon" ...

And as mentioned, even one single relevant "experiment" can falsify any such "axiomatic theory", thus making any form of manifestation of tradition, authority or dogmatism quite impossible.

Yet, majorities, tradition and authorities - the classical three tyrannies - can still have a heavy say and influence. One of such examples has happened in Quantum Mechanics where a majority support for what goes by the name of Copenhagen Interpretation enjoyed a dominating position for decades, following its introduction in the 1920s, and did so regardless of strong and insistent questioning from celebrities like Albert Einstein, Erwin Schrödinger, David Bohm, and several others.

Now coming back to religion, or more precisely, religions.

What is highly prominent when considering them is that those which are definitely monotheistic, or monistic - like the great religions of today - do happen nevertheless to go down along ways with considerably different basic texts, tenets, dogmas, principles, rituals, ceremonies, and so on.

And in this regard - be it consciously or not, willingly or not - none of them makes much difference, if they make any at all, between "fingers" and the "Moon", to use again the terminology of the mentioned Zen-Buddhist saying ...

And if we are at Zen-Buddhism, let us mention their radically different approach, according to which all holy texts are important and should be studied. However, they should be used as mere ladders, and once one climbed up them, one should leave them there, and should not carry them with oneself for any longer ...

In this regard there is indeed a rather significant difference between modern science and present day religions ...

And this difference is quite likely to persist for longer.

Namely, even nowadays in religion the role of "belief" is significantly more important than in hard science. And as such, it is crucially so, due to the fact that, much unlike in science, there is hardly not any possible role played in religion by a scientific type of validation pro-

cess.

And when it comes to "belief", well, obviously, we cannot expect the same kind of openness, flexibility, if not actually fluidity, as it happens in modern science related to what used to be its own "beliefs", namely, in its "axioms", or even in its kind of underlying Logic.

7. A Possible Way Forward ... ?

A possible way forward which may place within a clarifying, and thus useful joint framework both religion and science can be suggested by the essential features of the above. Let us, therefore, recall briefly these features :

- 1) Both science and religion are based on respective foundations which are accepted merely upon belief.
- 2) In hard sciences those foundations contain, among others, the "axioms".
- 3) The original ancient view of "axioms", as introduced in Geometry by Euclid, did essentially require that one should have decisive reasons for believing in the respective "axioms", reasons so clear and strong as to consider completely unnecessary any proof for those "axioms". In other words, the "axioms" had to be nothing short of self-evident.
- 4) Modern Mathematics, Physics, and other hard sciences have radically modified that ancient view of "axioms". Indeed, nowadays, any set of sentences can be taken as an "axiomatic system", provided that a) they, and their logical consequences, are seen to be relevant for the respective theory of science, and furthermore, b) they are consistent, that is, do not lead to logical contradictions. And in fact, this second requirement has recently been dramatically weakened with the introduction of both self-referential logic, as well as inconsistent logic.
- 5) The role of belief in the "axiomatic theories" of modern hard sciences, therefore, is no longer in the specific "axioms" which happen to be used. Instead, it shifted much *deeper*, namely, to the belief in

the usefulness of the "axiomatic method" as such, and of course, of the Logic used in the deduction of the "theorems" from the specific "axioms".

6) This new and much deeper level where belief is now operates in modern hard sciences cannot, again, be proved at present. And then instead, it is practiced solely upon the *pragmatic* fact that, so far, it has worked, and actually, it has worked nothing short of miracles ...

In this way, we note an immense change between 3) - 6) above, change happened in modern hard sciences.

And then, the question may arise :

Why not a similar shift of belief as practiced in religions, shift to significantly *deeper* realms ?

Namely, why should each religion hold to its specifics as the one and only way to salvation, thus so sharply conflicting with all other religions ?

After all, all such specifics may be no more than mere "axioms", or mere "fingers" trying to point to somewhere ...

Instead, religions should place belief much deeper, so deep as to recognize the possible validity, and why not, hopefully comparable validity of all other religions ...

And then consider their own legitimacy based solely on the strictly *pragmatic* fact - if any of such may indeed exist in sufficient abundance - of the good they managed to bring to their own believers ...

Within such a joint framework, science would focus on those Laws of Nature which act more or less instantly, while religion would - as has always done it - focus on the Laws of Nature which need not always manifest themselves immediately.

8. Postscript

Needless to say, given the nature of the issues considered above, both fundamental and complex, many views can arise about that "bringing again together" of science and religion ...

The above lines are, therefore, one such attempt, and all possible well meaning, even if critical, related comments are most welcome ...

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