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# Between Religion and Science. Georges Lemaître, Pope Pius XII and The Big Bang Theory

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## ABSTRACT

Georges Lemaître (1894-1966), both priest and physicist, is the founding father of the big bang theory. In 1951, pope Pius XII saw in Lemaître's theory a confirmation of the Christian doctrine of creation. Surprisingly enough, Lemaître opposed this official statement of the pope. According to him, a cosmological theory cannot be used as a proof nor as a refutation of an article of faith. In my research I investigate which vision Lemaître had on the relation between religion and science. This research puts the current-day discussion about religion and science in a surprisingly new light.

## Keywords

Big bang, Lemaître, religion, science, cosmology, theology.

## INTRODUCTION

Georges Lemaître (1894-1966) was a Belgian priest and a brilliant physicist who in 1931 developed the innovative hypothesis that the universe once must have had a beginning and that it has expanded from a single infinitesimally small point which he called the 'primeval atom'. Later on, this would become known as the big bang theory. In 1951, pope Pius XII held a speech in which he saw in Lemaître's theory a scientific confirmation of the Christian doctrine of creation. Surprisingly enough, Lemaître opposed this official statement of the pope. He even travelled to the Vatican in order to convince the pope – and with success – to stop advancing his theory as a proof of the creation stories of Genesis. According to Lemaître a cosmological theory which is always hypothetical and provisional can never be used as a proof nor as a refutation of an article of faith. He defended the theological position that it would be wrong to reduce God to a scientific hypothesis.

## RESEARCH QUESTION

Lemaître's resistance against pope Pius XII when he wanted to link his scientific theory of the beginning of the universe to Christian creation theology was remarkable. What were his precise arguments? Which vision did Lemaître have, both as a priest and as a physicist, on the relation between religion and science? How can we position Lemaître's vision against the different models which allow us to envision and elucidate the relation between religion and science? Can we draw any conclusions from this vision for today's discussion about religion and science?

## RESEARCH DESCRIPTION

1. In the first part I investigate the disagreement between Georges Lemaître and pope Pius XII about the big bang

theory from a history of science point of view (the case 'Lemaître – pope Pius XII').

2. In the second part I investigate a number of models from systematic theology which allow us to handle the relation between religion and science in different ways.

I retain two typologies which can serve as instruments to map this relation and to render it more explicit: (1) the typology of the Belgian theologian Lieven Boeve (KU Leuven), as discussed in his book *God Interrupts History. Theology in a Time of Upheaval* (2006), and (2) the typology of the American physicist and theologian Ian Barbour, as developed in his book *When Science Meets Religion. Enemies, Strangers or Partners?* (2000). Admittedly, there has been a historical evolution in the emergence of these models, but in practice it turns out that these models continue to co-exist synchronically until this very day.

In medieval theology the so-called *harmony model* reigned supreme, where theology and natural science strongly converged and were presented in one single synthesis. Through the rise of the modern natural sciences and the mechanization of the world picture this model came increasingly under pressure. The gap between religion and science was becoming ever greater, until the water between them was too deep and they ended up as diametrically opposed rivaling explanations. Gradually, from this *conflict model* the realization grew that science and religion are basically two different languages which are not in conflict with one another because they have a completely different function (a *difference model*). Science is about how things work and about objective facts. Religion is about values and ultimate meaning. Putting both science and religion at the same level as alternative explanations boils down to illegitimate cross-border behaviour where the specificity and the particularity of the language registers of religion and science fail to be respected. For example, 'randomness' is a notion which intrinsically belongs to the scientific discourse. The discussion about what has to be understood precisely under 'randomness' and the question whether or not randomness really exists is a scientific hypothesis which can be investigated purely on basis of scientific arguments (think only about the Bohr-Einstein debate about the possibility of 'hidden variables' in quantum mechanics and the Bell inequalities). Speaking about the 'acting of God' is a theological concept which belongs solely to the religious discourse. It is not about a scientific hypothesis which can be refuted on basis of experimental data in combination with scientific theories.

3. In the third part I investigate where precisely we can position Lemaître's vision on the relation between religion and science with regard to these models. I also examine which conclusions can be drawn from this investigation for the current-day discussion about religion and science.

The majority of the admittedly few studies on this subject in Lemaître's work originate from the scientific world. They focus mainly on the scientific aspects of his work and discuss the crucial role of his theory of the primeval atom in the coming about of contemporary cosmological theories. However, his *theological* points of view remain mostly out of the picture.

Those few authors who do take a closer look at Lemaître's ideas on religion and science usually summarize his position with the statement that according to him there are two ways to truth: the way of science and the way of religion. Two ways which Lemaître wanted to keep separated. However, he remains in a strained relation between both. As a scientist, Lemaître adopts a 'methodological atheism'. As a roman-catholic priest, he sees no difficulty in stating that from the point of view of science the concept of 'God' is meaningless. After all, the concept of 'God' cannot be written as part of a mathematical equation, nor can it be deduced from experimental data.

On the other hand, as a deeply religious priest Lemaître does indeed recognize the existence and validity of metaphysical knowledge as it has been revealed in the Bible. Albeit with a crucial difference: the only metaphysical, revealed knowledge from the Bible which can claim truth and validity is knowledge which pertains to 'salvation'. However, 'salvation is intrinsically a religious, theological concept which strictly belongs to the particularity of Christian religion. In other words, outside the context of Christian religion this concept has no meaning. Therefore, the fact that the Bible contains quite some parts which are scientifically unsound doesn't bother Lemaître in the least. He freely acknowledges that in this matter the writers of the Bible were no more inspired than any of their contemporaries. Only what is necessary for 'salvation' belongs to revealed knowledge.

Lemaître fully realizes that clinging on to the entirety of the Bible as a series of revealed truths to be taken literally will unavoidably result in a conflict with natural science. A classical harmony model is untenable. However, Lemaître absolutely wants to avoid getting caught in the trap of a conflict model.

He left no stone unturned in order to be taken seriously by the scientific community and never ceased to defend the position that a scientific theory cannot be used to prove an article of faith. It is against this background that we have to interpret Lemaître's stance with regard to pope Pius XII.

## CONCLUSION

At first the publication of the hypothesis of the primeval atom in 1931 was received with a great deal of scepticism. Lemaître, as a scientifically trained priest, was suspected of wanting to douse Christian creation doctrine with a

scientific flavour. But Lemaître wanted his theory to be judged purely by its scientific merits and he wanted to keep religion and science resolutely separated. He realized that a classical harmony model was untenable, but he absolutely wanted to avoid to get caught in the trap of a conflict model. He opts for *a difference model as a correction on a harmony model which turned out to be untenable*. This difference model means that science and religion are no rivaling explanations of reality which compete with one another within the same domain, but two activities which each have their own specific discourse and operate within their own domain. Only science is entitled to cognitive claims about physical reality. Religion is purely about experience and emotional attitude toward reality, but it does not add any knowledge about reality. Science and religion are to be found at different levels, they are different language games which only show similarities at the surface. Because science and religion are fundamentally different, they cannot come into conflict with one another. A problem only arises when elements from both language games get mixed (e.g. when the theological concept 'creation' would be used in a physical cosmological model).

This conclusion sheds a new light on today's discussion about religion and science. When a notorious atheist as Lawrence Krauss states in *A Universe From Nothing* that science has not made it impossible to believe in God, but only made it possible to not believe in God, then this is a legitimate philosophical appreciation. When a religious scientist as Leslie Wickman enthusiastically describes the practicing of science as a form of praise and an act of worship of God (in her article *Does the Big Bang breakthrough offer proof of God?*), then this is equally a legitimate philosophical appreciation. From the way in which Lemaître used the difference model we can say that both the religious and the non-religious are free in their metaphysical or religious interpretation and appreciation, as long as this interpretation and appreciation does not get mixed with the scientific work itself, that is to say, its methods, its theories, its results and its experiments.

Although philosophical and metaphysical elements in the scientific argumentation of a cosmological theory are not immediately visible, they certainly do play a role in the background. Further research into the precise interaction between a metaphysical background and the development of scientific theories, the role of metaphysical presuppositions in science and the importance of natural science and cosmology for theology is more than ever relevant. Although research of this kind is not directly applicable, it nevertheless has an increasing relevance for society. Experimental research in the foundations of physics and cosmology has become a very expensive endeavour, only possible when supported by society as a whole (e.g. the Large Hadron Collider at CERN in Geneva costs billions of euros). As religion is an integral cornerstone of human society, the importance of promoting the dialogue between science and religion cannot be underestimated.

## ROLE OF THE STUDENT

I have carried out this research as part of a bachelor program in theology and religious studies (major: systematic theology), under the supervision of prof. dr. Lieven Boeve (theologian, KU Leuven), who has worked in the research area 'religion and science'. Out of my previous education as a philosopher my interest in this research area has grown steadily, particularly the importance of natural science and cosmology for theology. The choice of this research subject was my own idea.

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## REFERENCES

1. Barbour, I. *When Science Meets Religion. Enemies, Strangers, or Partners?* Harper, Collins, New York, 2000.
2. Boeve, L. *God Interrupts History. Theology in Times of Upheaval.* The Continuum International Publishing Group Ltd, London, 2007 (original edition 2006).
3. Cornelis, G.C. *Het geheim van de kosmologie ontrafeld. Ten dienste van een waarheid.* ASP Editions, Brussel, 2012.
4. Dijksterhuis, E.J. *The Mechanization of the World Picture. Pythagoras to Newton.* Princeton University Press, Princeton, 1986 (original edition 1950).
5. Godart, O. & Heller, M. *Cosmology of Lemaître.* Pachart Publishing House, Tucson, 1985.
6. Lambert, D. *Lemaître. Geestelijke vader van de oerknaltheorie.* Translated by V. Jobse, Veen Media, s.l., 2013 (original edition 2007).
7. Lemaître, G. *The Beginning of the World from the Point of View of Quantum Theory.* *Nature*, 127 (1931), n. 3210, p. 706.
8. Lemaître, G. *The Primeval Atom. An Essay on Cosmology.* Van Nostrand, New York, 1950.
9. Luminet, J.-P. *The Rise of Big Bang Models, from Myth to Theory and Observations.* <http://arxiv.org/ftp/arxiv/papers/0704/0704.3579.pdf>
10. Pius XII, Un'ora. *Discorso di sua santità Pio XII ai cardinali, ai legati delle nazioni estere e ai soci della pontificia academia delle scienze, Giovedì, 22 novembre 1951.* [http://www.vatican.va/holy\\_father/pius\\_xii/speeches/1951/documents/hf\\_p-xii\\_spe\\_19511122\\_di-serena\\_it.html](http://www.vatican.va/holy_father/pius_xii/speeches/1951/documents/hf_p-xii_spe_19511122_di-serena_it.html)
11. van Biezen, A. *Wittgensteins On Certainty en de theorieëndynamiek. Een kritiek op Wittgensteins kennistheorie vanuit recente ontwikkelingen in de logica en de wetenschapsfilosofie.* Master thesis, Vrije Universiteit Brussel, Brussel, 1986.
12. Van Biezen, A. *Tussen geloof en wetenschap. Georges Lemaître, paus Pius XII en de oerknaltheorie.* Bachelor thesis, KU Leuven, Leuven, 2014.
13. Wickman L. *Does the Big Bang breakthrough offer proof of God?* <http://religion.blogs.cnn.com/2014/03/20/does-the-big-bang-breakthrough-offer-proof-of-god/>