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## **Georges Lemaître's 1936 Lecture on Science and Faith**

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*Georges Lemaître, a Mathematical physicist and a Catholic priest, is generally recognised as the key founding father of modern Big Bang cosmology. In recent years, his contribution to our modern scientific cosmological model has been increasingly recognised. However, his contribution to the science and faith field is still not very well known, especially in English. One of the reasons is that his views are dispersed in lectures that for the most part remain in French and have not been reprinted for many years. Here we present, for the first time, as far as we are aware, a full English translation of one of the key texts on science and faith from Lemaître: a 1936 lecture delivered at Malines (Belgium). All the crucial ideas in Lemaître's view of science and faith relations appear here. These ideas were present in his early work and continued to appear in his lectures throughout the rest of his life. They are expressed in this lecture in some detail and with a strong literary force that gives them, in some cases, the character of aphorisms.*

Keywords: Lemaître, concordism, discordism, hidden God, accommodation principle, scientific optimism

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### **Introduction**

Georges Lemaître was born in Charleroi (Belgium) in 1894 into a practising Catholic family. As he would recount in later years, at the young age of nine he took the extraordinary decision of becoming both a scientist and a priest: 'There were two ways of arriving at the truth. I decided to follow them both.'<sup>1</sup> Not even the First World War could stop him and he graduated in Mathematics and Physics in 1920 and was ordained into the priesthood in 1923.

After spending a year at Cambridge University (1923-24) under the guidance of Arthur Eddington, he moved to Canada (for the Toronto meeting of the British Association for the Advancement of Science) and to the United States (Harvard and MIT 1924-25) to complete his PhD.<sup>2</sup> It was during this year that he met Ludwik Silberstein, Harlow Shapley, Edwin

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1 Aikman, D. 'Lemaitre follows two paths to truth', *The New York Times*, 19 February 1933, 3-18, p. 18.

2 This he obtained from the MIT in 1927 with the thesis entitled: 'The gravitational field in a fluid sphere of uniform invariant density according to the theory of relativity'.

Hubble and Vesto Melvin Slipher. These people were key players in collecting the evidence for the galactic red-shift, the crux of the idea of an expanding universe. Upon his return to Belgium, Lemaître started teaching at the University of Louvain, where he was to remain for the rest of his life. It was from there that he made his two most lasting contributions to the science of cosmology: the discovery of the expansion of the universe<sup>3</sup> and the hypothesis of the Primeval Atom, the seed for the modern Big Bang cosmological model.<sup>4</sup>

As he dressed in the garb of a Catholic priest, his Christian commitment was well known – so well known that these two contributions of Lemaître to cosmology were often rejected under suspicion of being a ‘concordism’ between science and Christianity. Sadly, Lemaître’s real views on science and faith were seldom taken into account. He did not display a proselytising attitude and rarely did he mention his religious views in a scientific context. The two most detailed accounts of his views on science and faith are to be found in an interview given to *The New York Times* during a trip to the US in 1933 (NYT1933, see footnote 1)<sup>5</sup> and a lecture by Lemaître himself at the Catholic Congress of Malines in 1936 (ML1936), a complete version of which we offer here translated into English for the first time (for the original French text, see the on-line supplementary material).<sup>6</sup>

### The Catholic congresses at Malines

The Malines Congresses proved very influential in the history of the Catholic Church in Belgium. They came into being as a result of the attempts by the ‘Liberal Catholics’ of Belgium to find a way of situating the Catholic Church in a post-revolutionary nineteenth-century Western Europe. They had to face both conservative Catholics (at the time called ‘Ultramontanes’) who were still nostalgic for the *Ancien Régime*, and the non-confessional liberals who were pushing for a secular state and society. The first Congress was held at Malines in 1863, backed by the highest Catholic authorities in Belgium. The context was that of the rise of secularist forces in Belgium after the rise of the Liberal Party (which by this time had adopted anticlerical inclinations) in 1857 at the expense of the Catholic Party.<sup>7</sup>

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3 Kragh, H. & Smith, R.W. ‘Who discovered the expanding universe?’, *History of Science* (2003) 41, 141-162.

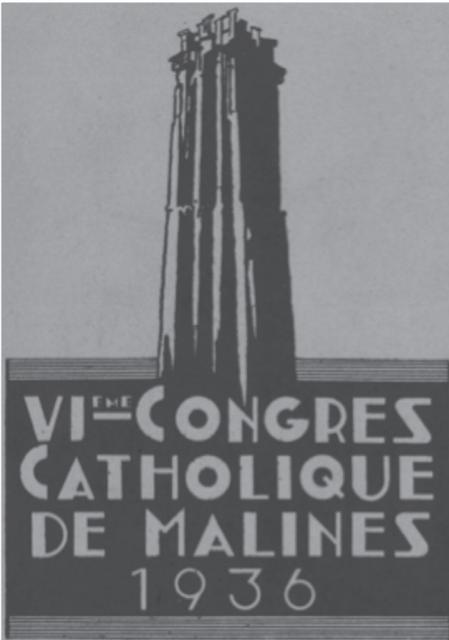
4 Kragh, H. & Lambert, D. ‘The context of discovery: Lemaître and the origin of the Primeval-Atom universe’, *Annals of Science* (2007) 64, 445-470.

5 Part of this interview was reproduced in *The Literary Digest* (11 March 1933) 115, 23, and in Vecchierello, H. *Einstein and Relativity: Le Maître and the Expanding Universe*, Paterson, NJ: St. Anthony Guild Press (1934), pp. 21-23 (References taken from: Kragh, H. *Matter and Spirit in the Universe*, London: Imperial College Press (2004), p. 142, footnote 42).

6 A Spanish translation is also in preparation.

7 For the historical antecedents of the Malines Congresses, see Van Gestel, G. ‘The Sixth Malines Congress’, *Blackfriar* (1936) 198,674-678.

The Malines Congress was repeated in 1864, 1867, 1891 and 1909. The sixth Malines Congress, organised by Cardinal Van Roey, was held on 10-13 September 1936. The context was, in a way, not much different from the first congress, with Catholics fearful of being ousted from the 1935 coalition government (of Catholics, Liberals and Socialists of the Labour Party) and also of the winds of change blowing through Europe in the 1930s.<sup>8</sup> Indeed, the Spanish civil war had just started a few months before, and the circumstances that finally led to World War II in 1939 were already very much in place. In fact, the editorial in the September 1936 issue of the Catholic *Blackfriars* journal started with a reference to the ‘red terror’ in Spain.<sup>9</sup> Not surprisingly, the title of the congress was: ‘Catholicism and the New Age’.



This congress, in line with the previous ones, was characterised by large audiences, with several adjacent sessions of study and debate (in the one held in 1936 there were as many as ten groups studying several aspects of ‘modern life’), exhibitions, many well-attended Masses, and so on. The congress closed with an impressive ceremony which took place at the Heysel Stadium in Brussels to accommodate the large crowd. The leaflet with instructions for those attending the ceremony depicted an imposing perspective of the Cathedral tower of St Rumbald in Malines (97.28 m high dating from the late fifteenth/early sixteenth centuries) in keeping with the grandiose and proud image of Belgian Catholicism that it was intended to proclaim (see Figure).<sup>10</sup>

It was in this context, on the first day of the congress, that Lemaître, who had been wondering about the essence and origin of the universe in

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8 In fact, the political situation at the time in Belgium was rather volatile. The 1935 government led by Prime Minister Paul Guillaume Van Zeeland resigned in the spring of 1936 due to the agitation of Rexism movement (a Belgian fascist party). The general elections of 24 May 1936 were won by the Labour Party (with the Rexist Party achieving an 11.5% of votes) and Van Zeeland was able to return to power (June 1936 – November 1937) in spite of continuous agitation from the Rexists.

9 Editorial, *Blackfriars* (1936) 198, 647-649.

10 The image is from the cover of the *VIème Congrès Catholiques de Malines: Journée de clôture 13 Septembre 1936*, Bruxelles: S.I.F.A.C (1936).

the trenches of the First World War, gave a lecture on the pursuit of truth by science and the relationship between science and faith in a world that was on its way towards the Second World War.

### The Lemaître lecture at the sixth Malines Catholic Congress 1936

The text appears in the fifth volume of the minutes of the congress. In the French and English versions below we have included the original page numbering in parenthesis. The text is divided up into four parts thus: \*\*\*. Nevertheless, it is easy to see that the lecture concentrates on the topics of science and faith in the first two parts (and the first two paragraphs of the third section) and then again in the final part. After the lecture, there are some brief notes on the debate that followed, which revolved around the central part of the lecture, regarding teaching at Catholic institutions. It seems that Lemaître's ideas on the relationship between science and faith were not commented upon. That was probably because, as Lambert points out, this lecture was delivered in a sub-section of the Congress<sup>11</sup> and was 'eclipsed by the debates in the general sessions' centred on the tensions between cardinal van Roey and right-wing 'Rexism' catholic party sympathisers.<sup>12</sup>

Dominique Lambert has analysed this key lecture in some detail. He indicates that in it Lemaître proposes two methodological principles.<sup>13</sup> On the one hand we have the *principle of mutual respect*, since although science is the 'highest human activity', given that it searches for truth, 'it is not the most vital' for mankind. Therefore, it should not be belittled or overrated in relation to other human activities (ML1936, p. 65). In addition, Lemaître put forward a *principle of unity without confusion or separation*, which were considered by him to be 'two extremes' that were to be rejected (ML1936, p. 69).

Lambert connects the first principle with Lemaître's idea of 'two roads to truth'. However, Lambert considers the second principle 'more difficult to sustain' ('beaucoup plus difficile à tenir') given the danger of creating an 'uncrossable fracture' ('fracture infranchissable') between the two roads. Lambert sees Lemaître's solution as a development of what he had already exposed in his interview in *The New York Times*, that is, a unity achieved

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11 It was delivered as part of section VI, sub-section A: 'The intellectual culture'.

12 Lambert, D. 'Pie XII et Georges Lemaître: deux visions distinctes des rapports sciences-foi', in Stoffel, J-F. (ed.) *Monseigneur Georges Lemaître, savant et croyant: Actes du colloque commémoratif du centième anniversaire de sa naissance, (Louvain-la-Neuve le 4 novembre 1994)*; suivi de: *La physique d'Einstein* (texte inédit de Georges Lemaître, édités par Stoffel, J-F.), Louvain-la-Neuve: Centre interfacultaire d'étude en histoire des sciences (1996), p. 84.

13 Lambert, D. *Un Atome d'Univers: La Vie et l'Œuvre de Georges Lemaître*, Brussels: Éditions Racine (2000), p. 167. There is an English edition: *The Atom of the Universe*. Cracow: Copernicus Center Press (2015). An earlier and similar version of this analysis is found in Lambert, D. *op. cit.*, (12), pp. 84-85.

not at the 'level of *pensée*' bridging scientific knowledge and religious ideas, but at the 'level of *action*'.<sup>14</sup> Science is a human activity and Lemaître's scientific activity is replete with a religious optimism that trusts in a final resolution of the scientific enigmas, since they are the product of an intelligent being (ML1936, p. 70).

This solution avoids a 'tension or an intellectual schizophrenia' in Lemaître and explains, as far as Lambert is concerned, the refusal by Lemaître to give a 'theological interpretation of the hypothesis of the primeval atom'.<sup>15</sup>

### **Lemaître on science and faith: more than 'two paths to truth'**

One of Lemaître's best known views on science and faith is his defence of the 'two paths to truth', as they were termed in the heading of the famous *New York Times* interview of 1933. Indeed, Lambert singles him out as a good example of a 'discordist' ('discordiste') regarding science and faith, as opposed to a 'concordist', in his discussion of the different approaches in the relationship between science and faith.<sup>16</sup>

That being true, it is important to point out other ideas that complement this central tenet of Lemaître's view. Lambert's analysis of the ML1936 mentioned above shows the complexity and subtlety of Lemaître's views. We would like to explore this in some detail. Lemaître himself never put down on paper any systematic review of his ideas on science and faith, therefore we have taken note of varied references in his works to offer what follows. We have taken into account what he did up to the ML1936, to get an idea of the context and earlier development of his views.

The reader can easily see that most of the following points are found both in the NYT1933 and in the ML1936, while in other works we find only some of them dispersed. The 1933 interview is a key source to discovering Lemaître's views that complement the 1936 lecture.

An interesting question that arises is how Lemaître's ideas developed in the remaining thirty years of his life following ML1936. These can be grasped in his lectures and correspondence, and in the memories of his students and collaborators. As Lambert has shown, he remained faithful

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14 Lambert, D. *op. cit.*, (13) p. 168.

15 Lambert, D. *op. cit.*, (13) p. 169.

16 Lambert, D. *Sciences et théologie: Les figures d'un dialogue*, Namur: Presses universitaires de Namur (1999), pp. 97f. His position has also been considered similar to the concept of non-overlapping magisterial (NOMA) of Stephen J. Gould by Lambert himself and also by John Polkinghorne: see Lambert, D. 'Georges Lemaître: the priest who invented the big bang', and Polkinghorne, J. 'Some theological reflections', in Holder, R.D. & Mitton, S. (eds.) *Georges Lemaître: Life, Science and Legacy*, Heidelberg: Springer (2012).

to his key ideas until the end of his life.<sup>17</sup> We will study his mature views from the 1930s, and we will not attempt to follow his ideas in his later years.

### 1. *Two paths to truth*

#### *Truth at its utmost*

Probably the key point in the idea of the two paths to truth is simply the desire to attain the truth that lies at the end of both paths. Lemaître said in 1933 to the *New York Times* how he had the idea of finding truth at a young age and he had already at that time become interested in both ways of doing so.

He takes you back to a time when he was 9 years old, because it was then, when most boys are interested only in games, that he decided to become a scientist.

I was a good student, especially so in dull, hard subjects like mathematics, and fascinated with the smattering of knowledge I picked up in elementary schools. So I naturally followed my bent.

What is more significant, he continues, is that exactly at the same time, actually in the same month as I remember it, I made up my mind to become a priest. I was interested in truth from the standpoint of salvation, you see, as well as in truth from the standpoint of scientific certainty. There were two ways of arriving at the truth. I decided to follow them both. (NYT1933, p. 18)

He also stated how he considered that the scientific activity to 'learn how it [the universe] began and how it is put together' is 'only seeking the truth. And is not truth-seeking a service to God?' (NYT1933, p. 3). Therefore, it should not be a surprise to find that the first paragraph in the ML1936 was:

The pursuit of truth is the highest human activity. It is reason that separates us from animals and our specific activity is to grasp truth under its every guise. (ML1936, p. 65)

And at the end of the fourth paragraph he insisted on it: '... humanity's own goal: the conquest of truth' (ML1936, p. 65).

#### *The power and limitation of science*

The praise of science by Lemaître did not lead him to forget that it cannot

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17 Lambert, D. *L'itinéraire spirituel de Georges Lemaître*, Bruxelles: Lessius (2007); Polish translation: *Droga Duchowa Georgesa Lemaître'a*, Tarnow: Biblos (2012); Spanish translation: *Ciencia y Fe en el Padre del Big Bang, Georges Lemaître*, Madrid: Ediciones Flíedner (2014).

be transformed into an absolute. In the ML1936 he first gave a glimpse of everyday realities in the third paragraph:

Even if science is the highest human activity, it is not the most vital, and thus generally does not hold the foremost position it should in man's ordinary concerns. Man is also an animal, and the pressing demands of his bodily nature often absorb his activity. (ML1936, p. 65)

He continues in the fourth paragraph in a similar vein and affirms that science is 'the work of an elite exempted from the mundane concerns for daily bread' (ML1936, p. 65). Therefore, in the fifth paragraph, he goes on to criticise those who, won over by their admiration for science, ignore these basic realities, as well as those who, on the basis of human values, ignore science:

These principles are sometimes forgotten, either by exaggeration, when Science is put forth as the only thing that matters, or on the contrary, and because of a fairer vision of the scale of human values, when it is not granted the consideration that the scientific activity deserves. (ML1936, pp. 65, 66)

Lemaître goes on in the seventh paragraph to lament the damage to faith that this latter mistake causes:

Many loyal people are alienated from the Church because they imagine it despises the search for the natural truth, and that its teaching lacked enthusiasm for the exposition of science. (ML1936, p. 66)

He forcefully defended the opposing attitude, saying in the next paragraph that 'it is essential' that the 'beauty' of science 'be fully brought to light' and that care should be taken when criticising the limits of science:

In pointing today's scientific limitations, one must carefully avoid any mistrust or contempt. The necessary criticism must be tempered by the hope for expected progress which, as it already has, shall broaden our horizons. (ML1936, p. 66)

*Rejecting the mistaken ways of relating science and faith: conflict, concordism and disconnection*

*– There is no conflict between religion and science to reconcile*

Lemaître was in a perfect position to affirm such an idea, as Aikman pointed out, because he was neither a scientist who professed Christianity nor a Christian cleric interested in science, he was both things from the very start of his career.

In fact, the NYT1933 opened with these revealing words: 'There is no conflict between religion and science' (p. 3). For Lemaître, the alleged conflict was only a 'misunderstanding' (p. 3) due to the belief by many scientists that 'the Bible pretends to teach science' (p. 3). That has dramatic

consequences when proved wrong: 'When they find the Bible's scientific references wrong, as they often are, they repudiate it utterly.' (p. 3). For Lemaître this is as absurd as 'assuming that there must be authentic religious dogma in the binomial theorem', and asks rhetorically: 'Should a priest reject relativity because it contains no authoritative exposition of the doctrine of the Trinity?' (p. 3). Lemaître returned to this point in the interview:

When men were told that they had the right to interpret the Bible's teachings according to their own lights, naturally some were bound to decide that its science was infallible and others that it did not agree with modern instrumental measurements and was proof of opposite doctrines. The conflict has always been between those who fail to understand the true scope of either science or religion. (NYT1933, p. 3)

After later talking of his double vocation as a scientist and priest, Lemaître affirmed emphatically, in the final words reported by Aikman, mirroring the beginning of the interview:

There were two ways of arriving at the truth. I decided to follow them both. Nothing in my working life, nothing that I have ever learned in my studies of either science or religion, has ever caused me to change that opinion. I have no conflict to reconcile. Science has not shaken my faith in religion, and religion has never caused me to question the conclusions I reached by strictly scientific methods. (NYT1933, p. 18)

At the end of his article, Aikman summarised Lemaître's personal reflections on the individual autobiographical forces shaping each of his vocations:

His religious bent, he feels, comes from the sincerity with which the line embraced the faith and from the control that faith exercised over their lives. His scientific bent, he reasons, comes from their conscientiousness, and from their personal honesty and sense of social obligation. (NYT1933, p. 18)

The second paragraph of the ML1936 illustrates this duality, in these words:

The supernatural truth has been made accessible to us by Christ and his Church. We could never have reached it by ourselves and it had to come down to us. The natural truth, on the contrary, is precisely proportioned to the faculties of our intellective nature. (ML1936, p. 65)

In keeping with this, at the end of the twenty-sixth paragraph, Lemaître shows his conviction that:

The Christian researcher may thus freely proceed, confident that no real conflict will crop up from his research against his faith. (ML1936, pp. 69, 70)

Boldly, given the people in attendance, in the ninth paragraph he makes a personal criticism of the way in which some theologians refer to science as giving credence to the idea of a conflict between science and religion, an idea that as we have seen, he openly rejected.

Theologians themselves might be partly responsible for the misunderstanding opposing science and faith. When a conflict seemingly arises between a traditional religious teaching and a new hypothesis that facts are progressively establishing, they are too prone to stall until the last moment before the hypothesis is definitely proved. They should much better cautiously study the very doctrinal points that seem to provoke conflict and strive to discern exactly in them, under the guidance of the responsible authority, what is unquestionably asserted by revelation. At any rate, such smart courtesy would be highly appreciated by the scientific circles and prove an excellent apologetic. (ML1936, p. 66)

Interestingly, already in 1936 Lemaître had observed the important role of the popular press and science pundits fostering the ‘conflict model’ between science and faith, and in the tenth paragraph he gives this piece of advice (that he himself followed):

Finally and above all, we must be especially wary not to fall into the trap of second and third rate popularisers, who attack religion in the name of what they believe to have understood from science. These people really are agents provocateurs, who would have succeeded if we treated them as accredited representatives of Science, and replied by showing contempt or hostility to it. (ML1936, p. 67)

#### *Rejecting the mingling and confusion of concordism*

An obvious objection to the above view of the Bible as not being a book of science, is the allegedly scientific teaching to be found within its pages. That was what Aikman asked Lemaître, pointing out the six days of creation and the story of Jonah. Lemaître’s response was that in the first case ‘Genesis is simply trying to teach us that one day in seven should be devoted to rest, worship and reverence – all necessary to salvation’ and in the second case, a lesson ‘that by faith and righteousness a good man may attain security and salvation whatever his perils may be’ (NYT1933, p. 3).

Indeed, Lemaître’s mature position on the relations between science and faith was not only a rejection of the idea of conflict, but also a rejection of concordism. It was not, by any means, a position that Lemaître always held, as it is now clear that in his youth he sustained a concordist position. The details of when, how and why he abandoned concordism are difficult to trace, due to the lack of documentation. The analysis of the existing relevant documents and pieces of information is beyond the scope of this paper. All we can say is that in the 1910s and early 1920s he defended a concordist interpretation of Genesis 1 that he had abandoned by the time of Aikman’s NYT1933 and even more explicitly in the ML1936. Whatever

the process was that led Lemaître out of concordism, it took place during the decade of the 1920s and early 1930s.

Lemaître started his reflection on science and faith issues at a relatively early age, while still in the trenches of the First World War, fascinated by the '*Fiat lux*' of Genesis 1. His first impulse, in the wake of his idea of two paths to truth, was to complement the biblical verses with whatever science might say about 'light'. His ideas have recently been reconstructed thanks to the 1914-18 diary of one of his friends during the war years, Joris Van Severen, and the correspondence between them that remains to this day.<sup>18</sup> Lambert has recently studied this documentation in detail showing its relevance to the gestation of some of the ideas that contributed to Lemaître's later idea of the primeval atom.<sup>19</sup> However, here we will only discuss their relevance to the relationship between science and faith.

We know that Lemaître read Poincaré's *Électricité et optique* (*Electricity and Optics*) with great interest in January 1916. However, in a letter to Van Severen dated in May 1917, he said that he had given up his scientific reading for a year to concentrate on spiritual matters. He then goes on to explain to his friend several of his religious activities during this year and finishes by saying that he has come to see 'the '*Fiat lux*' as the reason behind the universe'.<sup>20</sup>

In fact, on 17 April 1917, Lemaître shared his views on creation with Van Severen in a meeting they had at Wulpen. Lemaître told him that he had discovered the fundamental essence of matter: 'It is light!' and linked that to the *Fiat lux*.<sup>21</sup>

From around this time comes a telling description of Lemaître by Marie Elisabeth Belpaire, a relative of Van Severen:

an excellent mathematician, deeply religious who wanted to become a Benedictine and devote his life to study, in order to be able to show with utmost authority that faith and science, far from battling each other, represent a double certitude.<sup>22</sup>

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18 For the correspondence see Vanacker, D. 'Het absolute geloof van Georges Lemaître', in *Joris Van Severen: Zijn persoon, zijn gedachten, zijn invloed, zijn werk, Jaarboek 5*, Ypres: Studie- en Coördinatiecentrum Joris Van Severen (2001), pp. 5-40. For Van Severen's diary see Van Severen, J. *Die Vervloekte Oorlog: Dagboek 1914-1918*, Vanacker, D. (intro. & ed.), Kapellen – Ypres: Pelckmans – Studiecentrum Joris Van Severen (2005).

19 Lambert, D. *op. cit.*, (17), chap. 2.

20 Letter of 28 May 1917 from Lemaître to Van Severen, in Vanacker, D. 'Het absolute geloof ...' (2001) *op. cit.*, (18) p. 11, quoted in Lambert, D. *op. cit.*, (17), p. 26.

21 Van Severen, J. *Die Vervloekte Oorlog: Dagboek 1914-1918* (2005) *op. cit.*, (18), p. 215, quoted in Lambert, D. *op. cit.* (17), p. 44.

22 Vanacker, D. 'Het absolute geloof ...' (2001) *op. cit.*, (18), p. 8. This quotation is from Belpaire, M. *Gestalten in 't verleden*, Bruges: De Kinkhoren, Desclée de Brouwer (1947), p. 279, quoted in Lambert *op. cit.*, (17), p. 27.

It was in the summer of 1917 that Lemaître expressed his views on the exegesis of Genesis 1 in a text that he sent to his favourite religious author, Léon Bloy (see below), which sadly has not been preserved (but probably with ideas that differ only slightly from the ones he had first conceived in the trenches a few months previously). In September 1917 he visited Bloy at his home in Paris. However, Bloy did not share Van Severen's enthusiasm for the young Lemaître's ideas.<sup>23</sup>

Lemaître would shortly afterwards return to science in October 1917 and references to Bloy disappear from his writings from 1918. However, at the time he entered the Malines seminary in 1920, Lemaître was probably still faithful to his Genesis 1 interpretation of 1917. A manuscript entitled 'God's First Three Declarations' has been preserved with documents from this early period at the seminary, and dated from 1921 (although it could have originated at any time before, in his war years). In it, he used modern physics to explain Genesis in what Lambert has termed as 'moderate concordism'<sup>24</sup> – 'an attempt to interpret scientifically the first verses of Genesis', as he put it.<sup>25</sup> Interestingly, he started this text referring to what is commonly known as the 'accommodation principle' (quoting Augustine and Pope Leo XIII's *Providentissimus Deus*) to say that the Bible does not intend to teach science, but rather speaks in simple language 'accommodated' to the knowledge of common people in order to teach religious themes. However, he then jumps to a surprising conclusion. According to this concordist Lemaître, God may have enclosed in the words of the Bible some relevant truths about nature, which – in due time – science could identify and scientifically prove. This manner of reasoning is very old, and not very different from the 'weak' accommodation principle that, for example, Tycho Brahe defended in the late sixteenth century against the more 'radical' position of Christoph Rothmann, who rejected attempts to find answers to scientific problems in the Bible (see below).

Lemaître tried specifically to show that in Genesis 1 the idea of creation *ex nihilo* was already present. This expression appears as such rather late in Hebrew literature, the first time in the Hellenistic period (2 Mac. 7:28). However, Lemaître deduced it from the creation of light as God's first act of creation:

he used the idea of blackbody radiation to argue that the *Fiat lux* ('Let there be light') was just another way of expressing the divine creation *ex nihilo*: 'It is impossible for any body to subsist without emanating light, as all bodies at a certain temperature emit radiation of all wavelengths (theory of black bodies). In a physical sense, absolute darkness

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23 See Lambert, D. *op. cit.*, (17), pp. 36, 37.

24 'concordisme modéré' (Lambert, D. *op. cit.*, (12), p.82).

25 Quoted in Kragh, H. *op. cit.*, (5), p. 141. The full text, never published by Lemaître, can be found in Lambert, D. *op. cit.*, (12), pp. 107-111.

is nothingness.... Before the *Fiat lux*, there was absolutely no light and therefore absolutely nothing existed.' In this early phase of his life he found it reasonable to apply physics to the study of the Bible, as he believed there was a general agreement between Scripture and modern science. However, he soon came to the conclusion that concordance was not the right approach, and that the Bible should not be read as a scientific text.<sup>26</sup>

Although by the end of 1921 Lemaître had apparently abandoned his interest in the study of light in favour of studying relativity,<sup>27</sup> his insights on the role of light (radiation) would resurface in the late 1920s and early 1930s in the context of his explanation of the expansion of the universe, his study of Millikan's ideas on the origin of cosmic rays, and the primeval atom hypothesis.<sup>28</sup> In any case, by the time of Aikman's NYT1933, Lemaître illustrates his already consolidated discordist approach to the relationship between science and faith with this apparently autobiographical story:

Lemaître tells of a classroom scene in which he figured. An old father was expounding at the desk. Before him sat the lad who was to discover the expanding universe and who, even then, was brimful of science. In his eagerness the lad read into a passage of Genesis an anticipation of modern science.

'I pointed it out,' says Lemaître, 'but the old father was skeptical. "If there is a coincidence," he decided, "it is of no importance. Also if you should prove to me that it exists I would consider it unfortunate. It will merely encourage more thoughtless people to imagine that the Bible teaches infallible science, whereas the most we can say is that occasionally one of the prophets made a correct scientific guess."' (NYT1933, p. 3)

Finally, Lemaître went on to explicitly share his non-concordist views at ML1936 finishing (paragraph thirty) with these vigorous words rejecting

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26 Kragh, H. *op. cit.*, (5), pp. 141, 142.

27 In a letter of 26 October 1921, Lemaître wrote:

I have been very busy with the beginning of a work I have undertaken on the new theories of gravitation, known as the Einstein's principle of relativity and I have used the little time I spent in Brussels to document me in the Royal Library and delineate a specific topic of study in this vast scientific movement that tends to renew the basis of our conceptions of the physical world.

And now that I have resumed my life of seminarian, life of active peace, study and prayer, I rest from the detailed contemplation of the essential truths of religion, by analyzing the recent efforts of physicists to penetrate the harmony of the world; going thus from one to the other of the two ends of our knowledge: from the revelation of the invisible realities to the great admiration of the grandiose way God has expressed them in the figure of the world. *Colei enarrant gloriam Dei* [*The heavens declare the glory of God*], Letter from Lemaître to Van Severen 26 October 1921, Vanacker, 'Het absolute geloof ...' (2001) *op. cit.*, (18), pp. 31-32.

28 See Lambert, D. *op. cit.*, (17), chap. 3; and Heller, M. 'Light in the beginning: Georges Lemaître's cosmological inspirations', in O'Collins, G. & Meyers, M.A. (eds.) *Light from Light: Scientists and Theologians in Dialogue*, Grand Rapids: W.B. Eerdmans (2012).

both the conflict and concordism models of relating science and faith:

Thus, faith and Reason unite in human activity without improper mixing or imaginary conflict. (ML1936, p. 70)

Life then had gone full circle: now Lemaître was the priest teaching a non-concordist approach!

*Against the compartmentalisation and disconnection of science and faith*

With his previous background of toying with concordism and the regular accusations during his life of being a concordist, it is not surprising that Lemaître frequently distanced himself from this viewpoint, as we saw above. However, he did not solve the problem of the relationship between science and faith by going to the opposite extreme and severing all ties between them (even though he separated science and faith more explicitly over the years, in particular after the famous 1951 discourse by Pope Pious XII that fell in concordism<sup>29</sup>). In 1936, Lemaître tried to avoid both extremes before laying down his own alternative view, promoting a balanced way to relate science and faith. Towards the end of the Malines lecture (paragraph twenty-five), he framed the alternatives for a Christian scientist in this way:

How should the Christian researcher reconcile his religious convictions to the technical demands of his chosen scientific field? It would seem, as in many other cases, that he should keep the middle ground between two extremes. One is considering these aspects as two completely disconnected compartments from which he would in turn, according to circumstances, draw either his science or his faith. The other is, rashly and irreverently, mixing and confusing what must remain separate. (ML1936, p. 69)

## **2. The way to salvation**

*The hidden God*

On several occasions and in different ways, Lemaître mentioned the idea of a 'hidden God', an expression taken from Is 45:15 ('Truly, you are a God who conceals himself, God of Israel, Saviour!' The New Jerusalem Bible, 1985).

We cannot really find this idea clearly in the NYT1933, unless we consider it in some way related to the accommodation principle. It seems that the first appearance of the 'hidden God' in Lemaître, was in fact hidden from the eyes of the world. In the draft of his 1931 short note on Nature with his first proposal of the Big Bang, he had included a concluding para-

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29 For a discussion of this see Lambert, D. *op. cit.*, (17), chap. 7.

graph that he finally deleted, where this idea appeared:

I think that everyone who believes in a supreme being supporting every being and every acting, believes also that God is essentially hidden and may be glad to see how present physics provides a veil hiding the creation.<sup>30</sup>

He probably deleted this paragraph to avoid introducing any religious reference that might mislead readers. However, in spite of that, many thought then and still do now, that he had a religious agenda for his cosmological proposal. In this way, the idea of the 'hidden God' remained hidden from Lemaître's published writings for a few more years until it resurfaced in 1936, halfway through the twenty-sixth paragraph of the lecture at Malines.

The omnipresent divine action is everywhere essentially hidden. It is forever out of question to reduce the supreme Being to the level of a scientific hypothesis. (ML1936, p. 69)

It is very tempting in these last words to see a critical hint of the famous reply by Laplace to Napoleon regarding the absence of God from his system of the universe: 'Sir, I had no need of that hypothesis.'<sup>31</sup> Indeed, Lemaître explicitly criticised Laplace at the Solvay Congress in Brussels in 1958, for considering God as a solution to the beginning of the universe ('chiquenaude'), as well as the famous reference by Sir James Jeans to the 'finger of God agitating the ether'; in both cases God was reduced to being a mere solution for the initial push to the cosmos.<sup>32</sup>

*The 'accommodation principle' that the Bible teaches the way to salvation*

In the NYT1933, after Lemaître rejected seeing the Bible as a book of science (a belief that he considered to be at the root of the conflict between science and faith), he was asked by Aikman 'If the Bible does not teach science, among other things, what does it teach?', to which he replied 'The way to salvation'. (p. 3). In this sense he considered that revealed doctrines were so because they were important for salvation, regardless of their

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30 A copy of the original typescript, with the last paragraph crossed out by Lemaître has been reproduced in several places, as in Lambert, D. *op. cit.*, (17), p. 120.

31 The only other person at the famous meeting that wrote about it was the astronomer William Herschel, who described the exchange between Napoleon and Laplace in 1802 along the lines of the traditional story, but did not record the famous sentence by Laplace. However, there is a long tradition of this that goes back to Laplace himself, according to Arago, and that was recorded by Victor Hugo in his diary (31 December 1847); see Hugo, V. *Choses vues: souvenirs, journaux, cahiers*, 1830-1885, Paris: Gallimard (2002), p. 453). Recently the biographer of Laplace Roger Hahn wrote, 'This oft-repeated phrase may not have been spoken verbatim, but Herschel's diary records an event that reports the gist of the exchange.' (Hahn, R. *Pierre Simon Laplace, 1749-1827: A Determined Scientist*, Cambridge MA: Harvard University Press (2005), p. 172).

32 See Lambert, D. *op. cit.*, (17), chap. 6.

complexities. That is why the doctrine of the Trinity is in the Bible: 'being necessary to salvation, the doctrine is stated in the Bible. If the theory of relativity had also been necessary to salvation it would have been revealed to St Paul or Moses.' (NYT1933, p. 3) He finally articulated the very long-standing view in Christian theology called the 'accommodation principle' which, as mentioned above, considers that God accommodated himself to the state of knowledge of those to whom he revealed non-key theological issues, such as scientific issues:

As a matter of fact neither St Paul nor Moses had the slightest idea of relativity. The writers of the Bible were illuminated more or less – some more than others – on the question of salvation. On other questions they were as wise or as ignorant as their generation. Hence it is utterly unimportant that errors of historic and scientific fact should be found in the Bible, especially if errors relate to events that were not directly observed by those who wrote about them. The idea that because they were right in their doctrine of immortality and salvation they must also be right on all other subjects is simply the fallacy of people who have an incomplete understanding of why the Bible was given to us at all. (NYT1933, p. 3)

At a later stage in the interview, Lemaître pointed out that 'The church has always been aware that the Bible teaches salvation, not science' (NYT1933, p. 3), 'although the church's sense of the separate fields of science and religion has unquestionably developed through the ages' (NYT1933, p. 3). Indeed, the accommodation principle has a very long history, going back as far as the Church Fathers, in particular Augustine, who had a profound influence on the medieval views on how to relate reason/science and faith. This influence was still very much alive up at the time of the Scientific Revolution and was shared by both Catholics and Protestants alike. In fact, the work of Calvin proved important in making this view popular among Protestants. However, the historian H. Kragh sheds a different light on all this, indicating that Lemaître advanced a more radical accommodation principle in contrast to the traditional one:<sup>33</sup>

In his letter of 1615 to grand duchess Christina, Galileo quoted Augustine in support of his view that the Copernican universe did not contradict the true meaning of the Bible...

By the 1930s, the relevant cosmological questions had changed since the days of Augustine and Galileo, but Lemaître's position was essentially the same as that of his two great predecessors. Essentially, but not totally. Whereas Augustine affirmed that Moses 'knew where the

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33 On these two kinds of accommodation principles, see also de Felipe, P. 'The antipodeans and science-faith relations: the rise, fall and vindication of Augustine', in Pollmann, K. & Gill, M.J. (eds.) *Augustine Beyond the Book: Intermediality, Transmediality and Reception*, Leiden: Brill (2012), pp. 309-311.

truth lay', to Lemaître he did not have 'the slightest idea'.<sup>34</sup>

In the ML1936 there is a reflection of this view in these words (twenty-sixth paragraph) that follow the quotation in the previous section:

Divine revelation never taught us what we could have found out by ourselves, at least when these natural truths are not necessary to understand the supernatural truth. (ML1936, p. 69)

Here we can see Lemaître adopting, as Kragh mentioned, a 'radical' accommodation principle of the relationship between the Bible and science, as we mentioned previously, very different from the 'weak' accommodation of his 1910s concordism.

*The Christian scientist as God's child*

Lemaître held a realistic view of the human being, and although he considered the search for truth – and science as part of such a search – the highest human activity, he understood humans to be animals biologically and what he called, using a biblical expression, 'God's children' theologically. This is stated in the third paragraph of the ML1936:

And man is also God's child, in whom the fulfilment of divine grace has nothing to do with the degree of his intellectual development. (ML1936, p. 65)

But after presenting his own way of understanding the relationship between science and faith (see below), he applied this theological understanding in a way that engrafted the scientific activity of the Christian researcher at the heart of common Christian experience, saying at the end of the lecture (paragraph twenty-nine):

But the Christian researcher knows that his faith supernaturalises both the highest and the lowest of his activities! He remains God's child when he peers through his microscope and, in his morning prayers, he puts every daily activity under his Heavenly Father's protection. Reflecting on the truths of faith, he realises that his knowledge of microbes, atoms or stars will never help nor impede him from adhering to the inaccessible light, and that, like any fellow human, he will still have to achieve the heart of a little child to enter the Kingdom of Heaven. (ML1936, p. 70)

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34 Kragh, H. *op. cit.* (5), p. 144. As Kragh also points out: 'This liberal attitude was not particularly controversial in the 1930s, when the separate autonomies of science and religion were widely admitted within the Catholic church, but of course it was unwelcome among American and other fundamentalist groups.'

Lambert has pointed to the resonance of these words with those of an author who was the favourite of Lemaître during World War II, León Bloy (see below).<sup>35</sup>

### 3. Solving the enigma

#### *The enigma of nature*

Lemaître approached the mysteries of nature as challenges to decipher, as ‘enigmas’ to solve (see below). Earlier, in the 1931 lecture *L’expansion de l’espace*, he had said:

Our universe bears the marks of youth and we can hope to reconstruct its story. The documents at our disposal are not buried in the piles of bricks carved by the Babylonians: our library does not risk being destroyed by fire; it is in space, admirable empty, where light waves are preserved better than sound is conserved on the wax of phonograph discs. The telescope is an instrument which looks far into space, but it is, above all, an instrument which looks far into the past. The light of nebulae tells us the history of a hundred million years ago, and all the events in the evolution of the world are at our disposal, written on fast waves in internebular ether.<sup>36</sup>

This paragraph was followed by another one that considered cosmic rays to be one of nature’s unsolved enigmas:

One of the most curious hieroglyphs in our astronomical library is the ultrapenetrating radiation, cosmic rays. Can we fix its date? Can we read it?<sup>37</sup>

Lemaître’s optimism led him to talk about ‘this incessantly interesting and exciting universe’ (NYT1933, p. 3). The enthusiasm for the experience of discovery, the search for new knowledge, can already be seen in a discussion in London at the centenary anniversary conference of the British Association [for the Advancement of Science], held on 29 September 1931, a session on cosmology (entitled ‘The Question of the Relation of the Physical Universe to Life and Mind’) that was published in the scientific journal *Nature*.<sup>38</sup> Sir James Jeans said:

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35 Lambert, D. *op. cit.*, (17), p. 39.

36 ‘L’expansion de l’espace’, *Revue des Questions Scientifiques* (1931) 17, 391–340. We quote from the English translation in Lemaître, G. *The primeval atom*, Toronto: D. Van Nostrand Co. (1950), p. 75.

37 *ibid.*

38 *Nature* (24 October 1931) 128, 699-724. It can also be found in the *Report of the Centenary Meeting of the British Association for the Advancement of Science (1931, September 23rd-30th)*, London (1932), pp. 573-610, available at: <http://www.archive.org/download/reportof-britisha32adva/reportofbritisha32adva.pdf>.

Suppose some infallible oracle offered to give a 'Yes' or 'No' answer to two scientific questions for each of us. Personally, I think I might choose as my two questions:

1. Does the main energy of stellar radiation come from the annihilation of matter?
2. Is the universe expanding at about the rate indicated by the spectra of the nebulae?<sup>39</sup>

At the end of his contribution, Lemaître took on this supposition in this way:

If I had to ask a question of the infallible oracle alluded to by Sir James Jeans, I think I should choose this: 'Has the universe ever been at rest, or did the expansion start from the beginning?' But, I think, I would ask the oracle not to give the answer, in order that a subsequent generation would not be deprived of the pleasure of searching for and of finding the solution.<sup>40</sup>

By 1936 Lemaître had added a new Ancient metaphor to the 'bricks carved by the Babylonians' and the Egyptian 'hieroglyphs', talking about the effort: 'to decipher nature's multiply interlocked palimpsest' (ML1936, p. 70).

These ideas could be interpreted as an extension of an 'exegetical' approach to life. It is interesting to ponder how much this is related to the exegetical approach that Lemaître learned from Bloy's books. Bloy was driven by the aim to 'decipher the symbolic alphabet of the creation' employing an exegesis of history and the Bible, where every character is a piece of a grand spiritual design.<sup>41</sup> In the 1910s, Genesis 1 was seen by Lemaître as a cryptogram to be deciphered, but in 1936 the focus had changed, and the cryptogram to be deciphered in Lemaître's view was then nature.

### *The enigma that has a solution*

As can be inferred from the above quotations, a salient feature of Lemaître's thinking is his optimism in the human capacity to understand the world. Although, as we saw, Lemaître did not want to mingle science and faith, this was probably the only point where he saw Christian faith as making an important contribution to science. The reason for his optimism was theological: he believed that humans were endowed by God with the power to understand the universe, and that was the reason for his optimism regarding the scientific enterprise. These views reflect traditional theological doctrine, expressed in technical terms such as 'adaequatio

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39 *Report of the Centenary meeting of the BAAS, op. cit.*, (38), p. 579.

40 *Report of the Centenary meeting of the BAAS, op. cit.*, (38), p. 608.

41 See Lambert, D. *op. cit.*, (17), pp. 33-36.

intellectus ad rem', explained in terms of the *imago dei*. This was stated as early as 1929 at the very end of a lecture in Brussels that was then published in his book of 1946 (*L'hypothèse de l'atome primitive: essai de cosmogonie*):

We cannot end this brief review of the most magnificent subject that the human mind may be tempted to explore without being proud of these splendid endeavours carried out by Science in its conquest of the Earth, or without expressing our gratitude to One Who has said: 'I am the Truth', One Who gave us the mind to understand Him and to recognise a glimpse of His glory in our universe which He has so wonderfully adjusted to the mental power with which He has endowed us.<sup>42</sup>

A very similar idea can be seen at the end of the second paragraph in the ML1936:

The natural truth, on the contrary, is precisely proportioned to the faculties of our intellective nature. It is humanity's task to understand and value the creation that surrounds it and to which it belongs, to perceive in it a reflection of divine intelligence, by marvelling at being surrounded by intelligible matter. (ML1936, p. 65)

This idea is much expanded at the end of the lecture. After the passage where he defends keeping a middle ground between the extremes of concordism and a disconnected view of science and faith, he sets up his middle ground solution in paragraphs twenty-seven and twenty-eight. If he accepted some connection between science and faith, what was it? Where was the connection?

He [the Christian researcher] may even have an edge over his unbelieving colleague. Both strive to decipher nature's multiply interlocked palimpsest, on which the traces of the various eras of the world's long evolution overlap and merge. But the believer has the advantage of knowing that the enigma has a solution, that the underlying logic is ultimately the work of an intelligent being, that, therefore, the problem posed by nature was posed to be solved, and that its difficulty is probably proportionate to our human abilities, be it today or tomorrow. This knowledge might not provide him with new investigation resources, but it will help him maintain the healthy optimism without which a sustained effort cannot long endure.

In a way, the researcher leaves his faith aside in his research, not because it could hamper him, but because it has no immediate bearing on his scientific activity. Thus would a Christian walk, run or swim no differently from an unbeliever. (ML1936, p. 70)

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42 We quote from the English translation in Lemaitre, G. *op. cit.*, (36),p. 55.

These final words match what he said at the beginning of the twenty-sixth paragraph:

The Christian researcher should master, and astutely apply, the proper technique for his problem. His means of investigation are the same as those of his unbelieving colleague. So is his freedom of mind, but only if his idea of religious truths measures up to his scientific education. He knows that all that has been made has been made by God, but he also knows that nowhere did God take his creature's place. ... Divine revelation never taught us what we could have found out by ourselves, at least when these natural truths are not necessary to understand the supernatural truth. (ML1936, p. 69)

These words aim to highlight that Christians have no 'extra' scientific information from God to serve the scientific enterprise. There is no point in looking for scientific insight in the Bible, as in the concordist view, as we saw above. However, the story does not end here as, that said, Lemaître returns to what he considers to be the right way to relate science and faith, and give the Christian researcher the 'edge', as in the opening of the next paragraph, the twenty-ninth, he says:

But the Christian researcher knows that his faith supernaturalises both the highest and the lowest of his activities! He remains God's child when he peers through his microscope. (ML1936, p. 70)

Finally, we should mention that there is a particular point where Lemaître's theological optimism might have had a more concrete influence on his scientific views than probably allowed by his own model of science and faith relations. It has been argued that Lemaître's choice for a finite but borderless universe was driven by his 'prejudice' that the universe should be comprehensible, showing in this case that Lemaître 'did not deny the existence of any link between his science and his faith.'<sup>43</sup> He remained faithful to this model of the universe up to his death: 'Whether the universe is finite or infinite, we could say that, as God has given us the task of understanding it, it must be finite.'<sup>44</sup> This position had already been defended in the early 1930s by Lemaître, as reported by Richard Tolman: 'it might be urged, as has been done at least in conversation by Professor Lemaître, that the hypothesis of a closed and therefore finite model was an 'optimistic' one to make, since an infinite universe could not be regarded in its totality as an object susceptible to scientific treatment'.<sup>45</sup>

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43 Lambert, D. *op. cit.*, (17), pp. 128-129. On the relation between Christian faith and the defence of a finite universe, see Kragh, H. *Entropic Creation: Religious Contexts of Thermodynamics and Cosmology*, Aldershot: Ashgate (2008).

44 Notes by Jean Wilmet from Lemaître's last course on General Relativity (May 1964). Quoted in Lambert, D. *op. cit.*, (17), p. 181.

45 Tolman, R.C. *Relativity, thermodynamics and cosmology*, Oxford: Oxford University Press (1934), p. 484.

Interestingly, in NYT1933, Lemaître went a step further and envisioned a way of completing the full circle. If Christianity could give an impetus of optimism to scientific enterprise, the solving of scientific enigmas could, in turn, reinforce religious feeling:

There is, the abbé admits, a varying sense of conflict between science and religion in the different branches of science. 'The biologists seem to have peculiar difficulties.' He reasons. 'There is every reason for this. They have only recently discovered a few guiding laws and principles. Hence, in the past their studies have been confusing rather than enlightening. In a way their subject-matter has been gross.

'But give the biologists more laws like those of the Abbé Mendel and a new spirit is bound to awaken. The sense that this is a morally ordered universe will be inculcated. As soon as any science passes the mere stage of description it becomes a true science. Also it becomes [sic] more religious. The mathematicians, the astronomers and the physicists, for example, have been very religious men, with a few exceptions. The deeper they penetrated into the mystery of the universe the deeper was their conviction that the power behind the stars and behind the electrons of atoms is one of law and goodness.' (NYT1933, p. 3)

In this brief remark, it would seem that Lemaître has been carried away in his optimism about science promoting a religious spirit with the statements that most mathematicians, astronomers and physicists have been very religious men, although he was probably thinking about the situation several centuries earlier, at the time of the birth of modern science, rather than of his own day.

#### *The Christian esteem for science*

As we can see above, if the key impact of the Christian faith on science is the optimism that it brings to the solution of scientific problems posed by the universe, this also has a consequence: the dignity of science. It follows therefore that Christianity should be interested in science as well as faith, as Lemaître stressed in the eleventh and twelfth paragraphs of the 1936 Malines lecture:

Throughout the ages, the Church has manifested its esteem for Science by establishing Universities and Schools. An age-old institution, such as our illustrious University of Louvain, is a living testimony to the Church's past and present solicitude for scientific research; and even if some of the scientific institutions set up by the Church in the past throughout Christendom have become independent over the years, or even hostile to it, they probably cannot forswear completely their ecclesiastical origin. (ML1936, p. 66, 67)

The Church does not purport to a monopoly in scientific teaching; it is not uncomfortable with some natural activity conducted in parallel. It

wants to contribute loyally, and according to its resources, to mankind's common task. It does not matter whether the Church does everything or even much. It should only do well what it undertakes. (ML1936, p. 67)

In the following ten paragraphs Lemaître makes a passionate plea to the Catholic education system to achieve excellence in teaching. Some of his insights still have general application for education today.

After that, he seems to go back to the earlier science and faith discussion. In line with that, science is seen by Lemaître as a fitting activity for a Christian, and in turn, Christians should be proud of the new developments in science, rather than afraid of them. This provides a further reason to vindicate 'theologically' scientific activity among Christians that will then foster the positive attitude mentioned above under 'Truth at its utmost'. So we read the following in the twenty second and twenty third paragraphs:

Science must not only be taught, it must also be done, and it belongs to the Church's pride that its faithful should honourably contribute to its present development.

A higher education institution, like our catholic University, would fail in its duties if, forgetting its illustrious traditions, it would settle for teaching science done elsewhere, without contributing to the common work. (ML1936, pp. 68, 69)

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**English translation**<sup>46</sup> (each paragraph is numbered in the left margin; the numbers in brackets in the text correspond to the original French pagination)

## **The Catholic Culture and the Positive Sciences**

**by Canon G. Lemaître,**

Professor of the University of Lovain.

- [1] The pursuit of truth is the highest human activity. It is reason that separates us from animals and our specific activity is to grasp truth under its every guise.
- [2] The supernatural truth has been made accessible to us by Christ and his Church. We could never have reached it by ourselves and it had to come down to us. The natural truth, on the contrary, is precisely proportioned to the faculties of our intellectual nature. It is humanity's task to understand and value the creation that surrounds it and to which it belongs, to perceive in it a reflection of the divine intelligence, by marvelling at being surrounded by intelligible matter.
- [3] Even if science is the highest human activity, it is not the most vital, and thus generally does not hold the foremost position it should in man's ordinary concerns. Man is also an animal, and the pressing demands of his bodily nature often absorb his activity. And man is also God's child, in whom the fulfilment of divine grace has nothing to do with the degree of his intellectual development.
- [4] Scientific research remains the work of an elite exempted from the mundane concerns for daily bread, having with much effort acquired a specialised training and capitalising on a huge legacy, gathered by others and now used in laboratories, observatories and so on... to achieve, within the human community, humanity's own goal: the conquest of truth.
- [5] These principles are sometimes forgotten, either by exaggeration, when Science is put forth as the only thing that [66] matters, or on the contrary, and because of a fairer vision of the scale of human values, when it is not granted the consideration that the scientific activity deserves.
- [6] These principles govern the relations that Science and Religion ought to entertain and we must examine their consequences.

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46 Lemaître, G. 'La culture catholique et les sciences positives'. This lecture was delivered 10 September 1936, at the 6<sup>th</sup> Catholic Congress, Malines, and was published in: *Actes du VI<sup>e</sup> congrès catholique de Malines*, vol. 5, *Culture intellectuelle et sens chrétien*, Bruxelles: A.S.B.L., pp. 65-70. The full original French text is available as supplementary material on the website: [www.scienceandchristianbelief.org](http://www.scienceandchristianbelief.org).

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- [7] Many loyal people are alienated from the Church because they imagine it despises the search for the natural truth, and that its teaching lacked enthusiasm for the exposition of science.
- [8] It is essential that the beauty of the scientific results achieved by mathematics, physics, botany etc... be fully brought to light. This is indeed an integral element of our schools' professed humanism. In pointing out today's scientific limitations, one must carefully avoid any mistrust or contempt. The necessary criticism must be tempered by the hope for expected progress which, as it already has, shall broaden our horizons.
- [9] Theologians themselves might be partly responsible for the misunderstanding opposing science and faith. When a conflict seemingly arises between a traditional religious teaching and a new hypothesis that facts are progressively establishing, they are too prone to stall until the last moment before the hypothesis is definitely proved. They should much better cautiously study the very doctrinal points that seem to provoke conflict and strive to discern exactly in them, under the guidance of the responsible authority, what is unquestionably asserted by revelation. At any rate, such smart courtesy would be highly appreciated by the scientific circles and prove an excellent apologetic.
- [10] Finally and above all, we must be especially wary not to fall into the trap of second and third rate popularisers, who attack religion in the name of what they believe to have understood from science. These people really are agents provocateurs, who would have succeeded if we treated them as accredited representatives of Science, and replied by showing contempt or hostility to it.
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- [11] Throughout the ages, the Church has manifested its esteem for Science by establishing Universities and Schools [67]. An age-old institution, such as our illustrious University of Louvain, is a living testimony to the Church's past and present solicitude for scientific research; and even if some of the scientific institutions set up by the Church in the past throughout Christendom have become independent over the years, or even hostile to it, they probably cannot forswear completely their ecclesiastical origin.
- [12] The Church does not purport to a monopoly in scientific teaching; it is not uncomfortable with some natural activity conducted in parallel. It wants to contribute loyally, and according to its resources, to mankind's common task. It does not matter whether the Church does everything or even much. It should only do well what it undertakes.
- [13] In this matter, the Church's credit rests with the abilities of the teachers which it employs. Catholic education has to remain on par with any other scientific teaching and nothing should be spared for both the technical training of the teachers and the renewal of the teaching material, so that we remain at the forefront of every progress. No material difficulty should be used as an excuse: what one can do, one ought to be able to do it well.
- [14] The pride taken in what has been achieved despite difficult conditions through the admirable self-sacrifice of those who have to endure great hardships, and the awareness of the high value of our present teaching, cannot make us turn a blind eye to the advances that could make its operation less demanding and more effective.
- [15] I obviously do not pretend to undertake a critical analysis of our teaching, for

which I have neither the expertise nor the authority. It might not be useless though, restricting ourselves to the serene sphere of principles, to theoretically examine what would be desirable, knowing that ideals, when applied, must adapt to many necessities.

- [16] What should be the technical training of the priests on whom our schools' education mainly relies? To require of them the same training as lay people teaching the same disciplines would be to oversimplify. It would amount to ignoring the six years of philosophical and theological studies, which have given them a university-like level, even when not preparing them for any specific teaching commitment. And yet they have to know what they should teach [68], or, at least, they must be sufficiently prepared for learning it, and in this case have the time to do so.
- [17] The situation strongly depends on how far the courses to be taught are from those learnt in the seminary. However, things will always be difficult for the young teacher who must learn while he teaches.
- [18] The superior will probably not wear him out prematurely under exhausting chores; his charity-inspired senior fellows will to some extent lighten his load. The main danger comes from youth's keenness, which would easily lead him to abuse his strength, and so quickly ruin his health.
- [19] For specialized disciplines, such as physics, chemistry or mathematics, a specific training appears indispensable.
- [20] It is not even enough that the teacher knows about his course, he must also know what he's preparing his student for. This demand could be met, to some measure, if, contrarily to a widespread custom, teachers changed classes downwards instead of upwards: a second-rate year-eleven teacher might then become a first-rate year-ten teacher, since he would know what would be expected from his students the following year. By the way, lower classes do seem to require more pedagogical experience than higher ones, and should be reserved for more experienced teachers. Conversely, primary teaching is no preparation for secondary teaching, and neither does secondary teaching prepare for teaching at the university.
- [21] Finally and above all, the teacher's role (and in particular the science teacher) is not so much to instil in the minds a few technical notions as to arouse in the students an interest in science, a regard and even an enthusiasm for the discoveries of the human mind; and it is also to awaken, in a few of them, the desire to know more and to take the lead someday, that is to no longer learn about, but to do science. But how could this happen if the teacher himself is not university trained? How could he really prepare a student to studies he didn't pursue? The ideal, which it is to be hoped will increasingly become reality, is that every teacher be either a bachelor or a doctor in his teaching field.

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- [22] Science must not only be taught, it must also be done, and it belongs to the Church's pride that its [69] faithful should honourably contribute to its present development.
- [23] A higher education institution, like our catholic University, would fail in its duties if, forgetting its illustrious traditions, it settled for teaching science done elsewhere, without contributing to the common work. Its teaching itself would soon become lifeless if it were not upheld by the dynamism of scientific research; it would miss its main goal, which is to steer the best students towards important contemporary issues, and to teach them the stern discipline

of mind which shall prevent their youth eagerness from dissipating in empty quibbles or irrelevant pastimes.

- [24] Research and education are complementary. Teaching prevents the researcher from retreating into his own research and compels him to enlarge his knowledge and clarify his ideas. Without personal research, the professor quickly becomes incapable of understanding and appraising other people's research, which he is supposed to assimilate and make accessible to his students.
- [25] How should the Christian researcher reconcile his religious convictions to the technical demands of his chosen scientific field? It would seem, as in many other cases, that he should keep the middle ground between two extremes. One is considering these aspects as two completely disconnected compartments from which he would in turn, according to circumstances, draw either his science or his faith. The other is, rashly and irreverently, mixing and confusing what must remain separate.
- [26] The Christian researcher should master, and astutely apply, the proper technique for his problem. His means of investigation are the same as those of his unbelieving colleague. So is his freedom of mind, but only if his idea of religious truths measures up to his scientific education. He knows that all that has been made has been made by God, but he also knows that nowhere did God take his creature's place. The omnipresent divine action is everywhere essentially hidden. It is forever out of the question to reduce the supreme Being to the level of a scientific hypothesis. Divine revelation never taught us what we could have found out by ourselves, at least when these natural truths are not necessary to understand the supernatural truth. The Christian researcher may thus freely proceed, confident that [70] no real conflict will crop up from his research against his faith.
- [27] He may even have an edge over his unbelieving colleague. Both strive to decipher nature's multiply interlocked palimpsest, on which the traces of the various eras of the world's long evolution overlap and merge. But the believer has the advantage of knowing that the enigma has a solution, that the underlying logic is ultimately the work of an intelligent being, that, therefore, the problem posed by nature was posed to be solved, and that its difficulty is probably proportionate to our human abilities, be it today or tomorrow. This knowledge might not provide him with new investigation resources, but it will help him maintain a healthy optimism without which a sustained effort cannot long endure.
- [28] In a way, the researcher leaves his faith aside in his research, not because it could hamper him, but because it has no immediate bearing on his scientific activity. Thus would a Christian walk, run or swim no differently from an unbeliever.
- [29] But the Christian researcher knows that his faith supernaturalises both the highest and the lowest of his activities! He remains God's child when he peers through his microscope and, in his morning prayers, he puts every daily activity under his Heavenly Father's protection. Reflecting on the truths of faith, he realises that his knowledge of microbes, atoms or stars will never help or impede him from adhering to the inaccessible light, and that, like any fellow human, he will still have to achieve the heart of a little child to enter the Kingdom of Heaven.
- [30] Thus, faith and Reason unite in human activity without improper mixing or imaginary conflict.