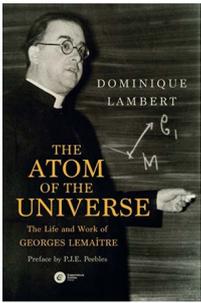


RECENSIONI



DOMINIQUE LAMBERT

THE ATOM OF THE UNIVERSE. THE LIFE AND WORK OF GEORGES LEMAÎTRE A FULL-SCALE PORTRAIT OF ONE OF THE FATHERS OF MODERN COSMOLOGY

Preface by P.J.E. Peebles
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In the last years, the cosmological community has seen a surge in interest for the figure of Georges Lemaître, thanks to a number of scholar articles about the birth of «Hubble's law» (e.g., Livio, *Nature* 479, 2011, and references therein). This Belgian scholar was one of the people that contributed the most to the development of the «standard model of cosmology», the best model we currently have to explain the birth and the evolution of the Universe. Even if Alexander Friedmann was the first to show that Einstein's equations can model an expanding universe, Lemaître rediscovered this solution and grasped its physical significance. Moreover, in 1927 Lemaître published a paper containing an analysis of the correlation between the receding speed of galaxies and their distance, proposing the famous relationship between distances and receding velocities of distant galaxies. In the same paper, he even made the first quantitative estimate of Hubble's constant, two years before Hubble's famous paper (1929)!

This English translation of Dominique Lambert's «*Un atome d'univers*» provides a full-scale portrait of the life and works of this notable scientist. It is always fascinating and revealing to study the life of great scientists, for one wonders how their *weltanschauung* influenced their scientific achievements. In the case of Lemaître, this curiosity is especially relevant, as the first proposer of the Big Bang hypothesis was a catholic priest as well. His priestly state was the reason why his cosmological ideas had often been accused of «*creationism*» and «*fideism*». To understand this delicate matter, Lambert's book provides a wealth of information about Lemaître's

pastoral activities, his membership to the priestly fraternity «*Amis de Jesus*», and, most importantly, his views about the relationship between science and faith. The latter is probably one of the more interesting topics discussed in the book. After some juvenile attempts to reconcile faith and science, starting from the 1930s Lemaître tried to keep science and faith separated (although he repeatedly stated that he saw no conflict between them). Lambert quotes a work by Lemaître, which is extremely clear in this regard: «[The Christian seeker] knows that everything that has been done has been done by God, but he knows also that God does not supplant his creation. The omnipresent divine activity is essentially hidden everywhere. It can never be a question of reducing the Supreme Being to the rank of a scientific hypothesis» (1936). This helps in explaining the complete lack of theological references in Lemaître's scientific papers, which were written with the purpose of being accepted by the whole scientific community, regardless of the faith (or lack of faith) of the reader.

Among the most interesting pages are the ones that explain Lemaître's reaction when Pope Pius XII addressed the Pontifical Academy of Sciences (1951) with the so-called «*Un'Ora*» discourse. In that occasion, the Pope cited Lemaître's cosmological hypothesis and «suggested that contemporary astrophysics could lead quite naturally to the field of Revelation» (pages 338-339). Lemaître's biographers refer to this fact quite often, quoting Lemaître's uneasiness with the idea of making a strong connection between a scientific hypothesis and religion. However, Lambert provides us with many details that

help to understand the historical context better.

Of great interest is the description of the many topics that interested Lemaître during his life, apart from cosmology. Many other astrophysical subjects raised his interest, such as celestial mechanics and the orbit of cosmic rays. However, the book reveals that the Canon was interested in other disciplines as well, such as pure mathematics (algebra of spinors, elliptic equations, etc.), Moliere's *oeuvre* (Lemaître proposed that the King of France himself in fact wrote some passages in Moliere's works!) and the pedagogy of mathematics. What appealed him the most were however numerical calculations: the book lists the many computing machines owned and used by Lemaître, as well as his interest for programming languages and his ingenuity in developing efficient computer codes.

The book is extremely detailed; in fact, it might be too much for the casual reader with only a generic interest for cosmology. However, for scholars and people interested in the development of science, this book is a real treasure of information. I want to underline here the care used in citing the references, even providing the date of oral conversations and email exchanges between the author and his sources. The preface by Jim Peebles and the afterword by Michael Heller add more value to a precious book: in particular, the latter contains an interesting discussion on the nature of Lemaître's legacy to modern cosmology.

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