

Editorial: A note on Papal Mathematics

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Received: 13 July 2025

Accepted: 25 July 2025

Online First: 28 July 2025

Abstract: Many recent media claims that Pope Leo XIV, Robert F. Prevost, born in the USA and elected in 2025 in succession to Pope Francis, is the first mathematician to become the Pope of the Catholic Church are questionable. That honour probably belongs to Pope Sylvester II (999–1003), Gerbert d’Aurillac, a Frenchman, educated in Moorish Spain which was then relatively advanced in mathematics and philosophy.

Keywords: Fibonacci, Hindu-Arabic numerals, Sylvester II, Zero.

2020 Mathematics Subject Classification: 11B39, 01A30, 97A40.

1 Introduction

At first sight, this might seem an unusual theme for this specific journal, but it does involve number theory, history and education: it concerns us as teachers and researchers. In particular, recent claims that Pope Leo XIV, Robert Prevost, elected in 2025, is the first mathematician to become the Pope of the Catholic Church are questionable. Prevost, with a Doctorate in Canon Law, has made no such claims, but that honour probably belongs to Pope Sylvester II (999–1003), Gerbert d’Aurillac [5], a Frenchman, educated in Moorish Spain which was then relatively advanced in, both mathematics and philosophy [11].

Prevost, born in the USA, but also a citizen of Peru, is undoubtedly the first person from either of those countries to be elected as the successor of St Peter in Rome. What number in that succession is a subject of interesting debate and intriguing argument which does not concern this note at this time! Prevost majored in mathematics at Villanova University in Pennsylvania, USA, class of 1997.



2 Discussion

Pope Sylvester, in the tenth century did not attend a university as we know them now [14], but he very probably also trumped Leonardo Pisanno Bigollo, better known as Fibonacci (Filius Bonacci), commonly claimed as the Western person who introduced the Hindu-Arabic system of numeration to Europe [9, 12, 19] and famous for the ubiquitous eponymous sequence of integers.

Rojas has noted that “Indian numerals had actually been introduced to Europe before Fibonacci’s work, during Al-Andalus – the period of Muslim rule in the Iberian Peninsula from 711 to 1492. The Codex Vigilanus, housed in the monastery of El Escorial in Spain, contains the first reference to the new notation from the early tenth century” [16, 17]. The Muslim intellectual influence in Spain also introduced Aristotle to Europe through Avicenna (Ibn Sina) and Averröes (Ibn Rushd).

The University of al-Qarawiyyin, (a madrasa), founded in 859 AD, is listed in *The Guinness Book of Records* as the world’s oldest degree-granting university, and the great Christian cathedrals, abbeys and monasteries were also centres of genuine learning in medieval times, with scholarly research as we understand it now, particularly in theology and philosophy, the latter with implications for mathematics.

Why publish this note in this particular journal at this time? Apart from the mention of the number theorist associated with the Franciscan friars, Fibonacci, the topic is linked to the history of mathematics and to the value of truth, so highly esteemed by mathematicians. It touches me personally in another manner too, because sixty years ago an eminent Australian refused a mathematics teaching position for which I had applied with the words “Under no circumstances would I consider having a Roman Catholic in my common room”. It did not surprise me then, and so I did not keep the letter, as they were very bitter sectarian times in Australia, and the writer to me ticked all the fashionable boxes: Oxford Rhodes scholar, war hero, Rugby International! I had not mentioned my religion in my letter of application, because it is irrelevant to mathematics and to my teaching of mathematics, at least *per se* (inherent), if not *per accidens* (incidental)!

Sylvester was also possibly one of the first Western mathematicians who understood zero as both a place-marker and a number. Gerbert’s writings are referenced in the Patrologia Latina Volume 139. This series includes Latin works by ecclesiastical writers. It spans a millennium, from Tertullian (d. 230) to Pope Innocent III (d. 1216), edited in roughly chronological order in 217 volumes.

Whether the claims about Leo’s possible understanding of Artificial Intelligence from his mathematical background [13], have any credence remain to be tested [10], although in a sense he did so a few days after his election in an address to a meeting of about seventy world leaders, reminding them of the AI role as a tool, not a replacement, for humans: “*Our personal life has greater value than any algorithm.*” [18]. Furthermore, Matthew McDonald quotes Professor Jim Franklin, an erudite Professor of Mathematics at UNSW and the current editor of the Journal of the Australian Catholic Historical Society, in relation to Leo and AI [15]. Franklin has extensive knowledge of the periods and the philosophies to which we refer [6].

3 Conclusion

The famous historian of mathematics, Ivor Grattan-Guinness, also explored features of the intersection of mathematics and Christianity, examining examples and raising related issues [8], as does Walsh [20] and Brother Guy Consolmagno SJ, the Jesuit Director of the Vatican Observatory, an unrelenting foe of letting superstition into religion [3, 4]. “*If in the Dark Ages a pope could disinter his predecessor and dramatically disown the other’s decision, it would be an absurd and frightening tactic in our present age*” [1].

Moreover, Pope Leo’s immediate predecessor in the Vatican, Pope Francis, took the most unusual step of dedicating an “Apostolic Letter” (an official Papal document) to honour the fourth centenary of the birth of the mathematician, Blaise Pascal [2]. Francis was the first South American and Jesuit priest to become a Pope, just as Leo is the first North American and Augustinian friar to become a Pope. We await to hear what Pope Leo himself might say in the future with reference to mathematics as a philosophical lens for viewing truth.

This note is not intended as some sort of manifesto. Rather, mathematics is, in a very real sense, the most amoral of the sciences, (which does not mean that no mathematician is immoral when it comes to academic integrity in the days of Artificial Intelligence), but we should respect each other’s personal spiritual convictions [7].

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