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The Origin and Significance of Zero
Peter Gobets and Robert Lawrence Kuhn (*Eds.*)

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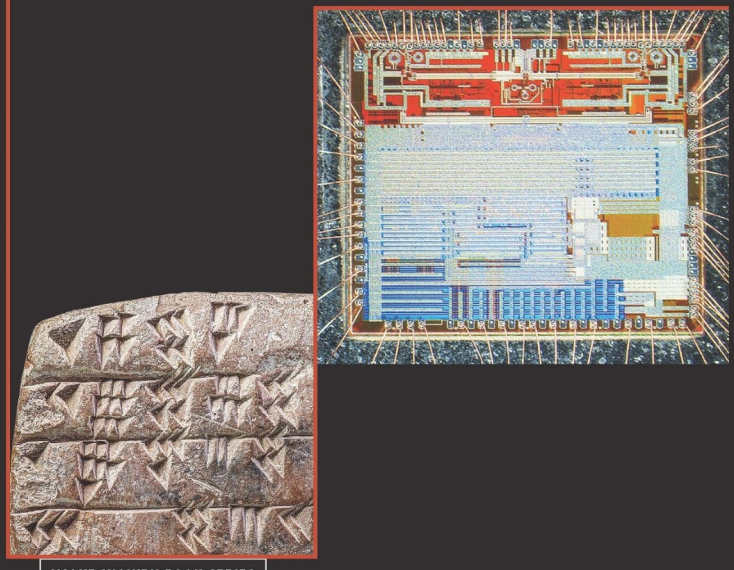
Edited by **Peter Gobets**
and Robert Lawrence Kuhn

The Origin and Significance of Zero

An Interdisciplinary Perspective



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The Origin and Significance of Zero

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Numeration in the Scientific Manuscripts of the Maghreb

Djamil Aïssani

Abstract

In this paper, we begin by recalling the beginning of the mathematics of Islamic countries, particularly by emphasizing the influence of Indian arithmetic. Next, we present the particularity of the mathematics of the Muslim West (Maghreb and al-Andalus), by revealing the specificity of the digits and the symbolism used. Third, we focus on the role played by the city of Béjaïa (Algeria) in the 'popularization' of Arabic numerals in Europe, following the stay of mathematician Leonardo Pisano, or Fibonacci. The contribution of this article concerns the presentation of the numeration available in the Maghreb on the basis of the analysis of *Afniq n 'Ccix Lmuhub* (*Khizana* – the scholarly library of manuscripts of Sheikh Lmuhub). Discovered at Tala Uzrarin 1994, it is currently the only library of manuscripts cataloged in Kabylia (Algeria) (Aïssani, 2007; Aïssani, 2011).

Keywords

Muslim numeration – mathematics of Muslim West – Arabic numerals – Huruf al-Ghubar – symbolism – Maghreb – Béjaïa – Leonardo Fibonacci

CHAPTER 14

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1 Introduction

Since the twelfth century at least, it has been known that two families of figures were adopted by Muslim authors (Aïssani, 2018), both from Indian numeration. Their existence was attested as early as the twelfth century by the Maghrebian mathematician Ibn al-Yāsamīn (d. 1204), in his treatise *Talqih* (folio 7–8) (Abdeldjaouad, 2012).

The form adopted by the mathematicians of the Muslim West (Maghreb and Al-Andalus) gave birth to what are now called Arabic numerals, or Hindu-Arabic numerals. Ibn al-Yāsamīn had used a dust-covered calculation

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