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critically edited with notes

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The Last Chapter of Sphujidhvaja's *Yavanajātaka* critically edited with notes¹

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Abstract

Since its discovery by scholars in the late nineteenth century, the last chapter of Sphujidhvaja's *Yavanajātaka* has been known as one of the earliest extant specimens of Indian astronomical works composed in Sanskrit. Subsequently, thanks to David Pingree's 1978 edition of the text, this chapter became widely recognized as one of the earliest Greek astronomical texts translated into Sanskrit, revealing the remarkable connection between the Greco-Babylonian astral science and the Indian one. However, some of Pingree's claims had been disputed by scholars and Pingree's reading and interpretation of the primary materials have been challenged by scholars such as Shukla (1989) and Falk (2001). In the light of the discovery of a new Nepalese paper manuscript and some other additional materials, some of the lacunae may now be filled and the additional variant readings have given us further clues to an improved interpretation of the text. The present study provides a summary of all the new findings concerning the last chapter of the *Yavanajātaka*, together with a revised, annotated critical edition.

¹ I would like to thank all the scholars who kindly offered their help and advices during the course of this research. First and foremost, it was Professor Yano Michio who introduced me to the *Yavanajātaka* and read with me and his students its beginning chapters in early 2010. Professor Yano was also the first to inform me in August 2011 about his discovery of the new manuscript Q in the collection of the Nepal-German Manuscript Preservation Project (NGMPP) during his trip to Nepal. The color copies of mss. Q and N were provided to me by Michio Yano, with the facilitation of Professor Harunaga Isaacson and Dr. Albrecht Hanisch. In addition, Professor Isaacson and Dr. Kengo Harimoto provided me the black-and-white copy of N and other fragments titled *Yavanajātaka* in the NGMPP collection. In September 2012, after some lacunae and variants were identified, Professor Harunaga Isaacson read with me parts of the last folios of the manuscripts Q and N. In October 2012, Professor Francesco Sferra informed me about an additional facsimile of N made by Giuseppe Tucci where the missing folio was found and provided me a copy of it. Subsequently, some of the major findings described in this paper were presented during the annual conference of the Association for the Study of the History of Indian Thought (インド思想史学会) held at Kyoto University on 22 December 2012, and were later published in Mak 2013 after receiving suggestions from Professor Alexis Sanderson, Professor Yūko Yokochi, Professor Diwakar Acharya, Professor Somadeva Vasudeva and Professor Dominik Wujastyk. I thank also Professor S. R. Sarma and Professor Takao Hayashi for their extremely thorough comments and suggestions on a draft of this paper during its final stage. Needless to say, all remaining errors are of my sole responsibility.

I. Introduction

In 1978, David Pingree published his edition and translation of Sphujidhvaja's *Yavanajātaka*. The text soon established itself as one of the most important historical documents in various fields of Indology, from the history of mathematics and astral science, to Indian chronology and historical contacts among ancient cultures. A number of Pingree's claims concerning the text has been widely quoted by scholars in the past decades. These claims may be summarized as follows: The *Yavanajātaka* was an astrological/astronomical work composed in 269/270 CE by Sphujidhvaja, an "Indianized Greek" who lived in the realm of the Western Kṣatrapas. The work was a versification of a prose original in Greek composed by Yavaneśvara in Alexandria in 149/150 CE. The work, though highly corrupt and clumsily expressed, contains algorithms of "ultimately Babylonian origin", the earliest use of *bhūtasamkhyā*, as well as the earliest reference to the decimal place-value with a symbol for zero (*bindu*).

Pingree's claims were based largely on readings from the last section of the *Yavanajātaka*, described by him as "Chapter 79 - Horāvidhiḥ", an exposition of mathematical astronomy. Although scholars including Shukla and Falk have pointed out some major flaws in Pingree's interpretations and reconstitution of the text, further progress of a proper reevaluation of the controversial contents of this chapter has so far been hampered by the lack of better source materials. In 2011-2012, additional materials including a hitherto unreported manuscript of the *Yavanajātaka* were discovered by Yano Michio and discrepancies between Pingree's edition and readings from both the new and the old manuscripts were identified by the present author.² This paper will therefore be a new attempt to reexamine Pingree's key interpretations of the *Yavanajātaka*, focusing on this last chapter, in the light of the new textual evidences which have so far not been considered.

II. Textual sources

The additional textual materials used in this paper are of two main varieties: i) alternate copies of the Nepalese manuscript N, which was the basis of Pingree's edition, as well as other unreported copies of the *Yavanajātaka*;³ ii) additional parallel texts and testimonia not mentioned by Pingree.

II.1 Manuscripts

The manuscript N is so far the most complete source of the *Yavanajātaka* extant and it is the only source where all chapters of the work are included, partially or entirely. It was first described, together with a transcription of the last four verses, by H.P. Shastri in

² Mak 2013: 4.

³ See below for a complete description of all the manuscripts.