

Project Report

**Editing *Karaṇābharāṇa*: A commentary on *Karaṇaparakāśa*
by Śaṅkaranārāyaṇa Joyisa***

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INTRODUCTION

The project aimed to prepare a critical edition of the *Karaṇābharāṇa*, a commentary on the *Karaṇaparakāśa* of Brahmadeva (11th century CE), by Śaṅkaranārāyaṇa Joyisa (17th century CE). This work is available as palm leaf manuscript written in Nandināgarī script. The manuscripts have been preserved over 400 years as family heritage by the descendants of the author in Sringeri of Karnataka state. Indeed, the *Karaṇaparakāśa* is an important work in the history of *karaṇa* texts. Its commentary *Karaṇābharāṇa* stands testimony to the presence of scholarly activities in the field of Indian mathematics and astronomy during 17th century CE particularly in the Karnataka region.

The edited volume prepared under this project comprises of the following sections:

- I. Preface/Background
- II. Introduction
 - (a) Characteristics of *karaṇa* texts
 - (b) *Karaṇābharāṇa* and its author
 - (c) Salient features of the *Karaṇaparakāśa* and *Karaṇābharāṇa*
 - (d) The edited text of *Karaṇābharāṇa* in nine chapters

The first part of the work was to procure manuscripts as many as possible to bring out a critical edition. With much efforts we could

acquire only two manuscripts of the work to prepare the critical edition. Inscriptions and some related documents were also procured to know more about the commentator and his lineage. A major task in bringing out this edition was to get the text transliterated from Nandināgarī to Devanāgarī script. Then, the entire work was typeset using LaTeX.

As the critical edition was being prepared, some important aspects that were noticed in the text (*Karaṇaparakāśa*) and its commentary (*karaṇābharāṇa*). Those were highlighted in the introduction wherein the details of the commentator and his family lineage are also presented. The manuscripts has its contents in nine chapters which are listed here in Table 1. The contents of the manuscripts are presented in section III of our book.

Table 1. The chapters (*adhikāras*) of the *Karaṇaparakāśa*

No.	Chapter name	Description	No. of verses
1.	<i>Madhyama</i>	Mean longitude	15
2.	<i>Tithyādi</i>	Determination of <i>tithi</i> etc.	18
3.	<i>Spaṣṭa</i>	True longitudes	13
4.	<i>Chāyā</i>	Shadow computations	14
5.	<i>Candragrahaṇa</i>	Lunar eclipse	22
6.	<i>Sūryagrahaṇa</i>	Solar eclipse	9
7.	<i>Udayāsta</i>	Rising and setting	8
8.	<i>Śṛṅgonnati</i>	Cusps of the moon	8
9.	<i>Grahayuti</i>	Conjunction of planets	11

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As may be noted in table above, in all there are 118 verses in the main text. These are composed in a variety of meters which are identified as presented in Table 2.

Table 2. Meters (*chandas*) employed in the *Karaṇaparakāśa*

No.	Name of meters	No. of syllables	No. of verses
1.	स्रग्धरा	21	1
2.	शार्दूलविक्रीडितम्	19	11
3.	मन्दाक्रान्ता	17	2
4.	स्वागता	14	2
5.	मालिनी	15	1
6.	दोधकम्	12	2
7.	स्रग्विणी	12	1
8.	इन्द्रवंशा	12	12
9.	वंशस्थम्	12	6
10.	वसन्ततिलका	12	21
11.	वंशमाला	12	1
12.	द्रुतविलम्बितम्	12	2
13.	तामरसम्	12	2
14.	रथोद्धता	11	3
15.	उपजातिः	11	38
16.	इन्द्रवज्रा	11	8
17.	शालिनी	11	4
18.	मात्रावृत्त	4	—

The critical edition of the *Karaṇābharāṇa* has been prepared based on two manuscripts, since we could find only two copies of it. By and large both the manuscripts are flawless and free from ambiguities. Rarely we come across a word that would be grammatically or metrically incorrect. In all such instances, we have provided a possible correct reading. The same procedure is followed wherever the text is unclear. The correct readings have been presented in the main text and the manuscript versions are shown in footnotes. In places where we could not decide, the doubts have been presented as they are.

The *Karaṇaparakāśa* is one of the oldest *karaṇas* based on the *Āryabhaṭīya* system. It was

composed in the *Śaka* year 1014 (1092 CE) by Brahmadeva (c.~1060-1130 CE) who was the son of Candrabudha, native of Mathurā. In line with the purpose with which a *karaṇa* text is composed, here too the author strives to provide simpler rules for the computation of various astronomical quantities, and in doing so, he has been quite successful. Its commentary *Karaṇābharāṇa* was authored during the 17th century CE by Śāṅkaranārāyaṇa Joyisa s/o Demaṇa Joyisa of Śṛṅgapurī, a scholar under the patronage of Śṛṅgerī Śāradāpīṭham. The word *Karaṇābharāṇa* means ‘the ornament of the *karaṇa*’. Surely, the title given to the commentary is suggestive of the fact that the author considers his work to be the one which decorates the *karaṇa*. True to its name, this commentary makes the *Karaṇaparakāśa* shine in the light of its lucid explanations. The commentator explains the verses of the *Karaṇaparakāśa* in simple terms so that the reader may be able to quickly comprehend the mathematical procedures prescribed by the original text. It lucidly explains the computational processes. The fact that a text, composed in northern part of India, gets commented by a scholar in south itself shows the popularity of the *Karaṇaparakāśa*. Through the meticulous care and efforts of the successors Śāṅkaranārāyaṇa Joyisa, fortunately this commentary *Karaṇābharāṇa*, written on palm leaves in Nandināgarī script, is available to us.

Śāṅkaranārāyaṇa Joyisa, besides the *Karaṇābharāṇa*, has authored other three works. Two of them are commentaries on the *Vārṣikatantra* of Viddaṇa (s/o Mallaya c.~1370) (i) *Tantradarpaṇa* in Sanskrit and (ii) *Gaṇita-gaṇaḍi* in Kannada and the third one is a short work on eclipses called the *Grahaṇaratna*. The epithets found in the colophons of his other works, describe him as an expert astronomer, also brilliantly bring out his ability as a talented debator who can easily win over others in discourses, thereby suggesting his extraordinary scholarship and capability as a commentator and a poet. We

could trace the lineage of the author of *Karaṇā-bharaṇa* starting from Devaru Joisa (author's grandfather) till the present custodian of the manuscripts in that family. *Epigraphia Carnatica*, Vol. VI and a stone and copper inscription helped in identifying the time of the author.

The commentator supplies additional information wherever felt necessary. In the first verse of the first chapter, while explaining he showcases his knowledge of grammar and sanskrit literature. While explaining the computation of *ahargaṇa*, he gives a clear idea of various *śakas* employed in reckoning years. In the third chapter, while discussing the rising time of zodiac signs, the commentator presents a verse composed by him to state the ascensional difference in his own place Śṛṅgeri. He provides the measure of equinoctial shadow at own location in *kaṭapayādi* system by means of a *vākya* (phrase) *jñānāṅga* which stands for 3 *anṅulas* and 00 *vyaṅgulas*. He also presents twelve *vākyas* which provide the rising times of twelve *rāśis* in Śṛṅgeri. Such additional information on various topics help readers to expand their horizon of knowledge. Though the commentator doesn't get into deep discussions, the lucidity with which he explains the verses facilitates the reader to quickly get into the heart of the text.

I express my gratitude to the family of Śaṅkaranārāyaṇa Joyisa, especially Sri Sitaram Javagal who gave me this opportunity to work on this valuable text. His efforts to bring out this edition are commendable. I would like to thank INSA and in particular Indian National Commission of History of Science for sanctioning the project. I thank Advaita Shodha Kendra of Śṛṅgeri Mutt for providing the digital copy of the manuscripts. I am glad to acknowledge the facility

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