

Solar eclipses in India's cultural and political history

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Abstract. This contribution presents earliest records in the Indian stone inscriptions and literature that specifically mention the eclipse as total or annular and the eclipses that timed with wars. Solar cult temples can be found all over India. In a few, the assigned dates coincide or are close to the dates of solar eclipses of large magnitude in the area.

Keywords. Solar eclipses, Indian Stone inscription records, Solar Cult Temples, War Eclipses

1. Introduction

Eclipses have been an integral part of India's cultural and political history and occasions for the Hindus to engage in ablution and charity with hope for a better after-life. The first right words on eclipses came from Aryabhatta (476–550 CE) in his monumental work *Aryabhatiya* (499 CE). He showed how the eclipses are a play of shadows of the Moon and the Earth and gave an algorithm for their prediction and calculation (Shukla 1976 : Ch IV). Only rarely did the classical astronomy works carry actual observations of eclipses. As an exception, the *Siddhantadipika* by Parameśvara (ca. 1380–1460 CE) carries observations of solar and lunar eclipses that he himself observed through 1393–1432 CE (Hari 2003). The first reference to annular eclipse in an Indian text is found in the *Brhat Samhita* (BS; 505 CE), an encyclopaedic work by Varahamihira (485–587 CE) where he mentions of a madhye tamah – obscuration in the middle (BS: V:51; Bhat 2010). Such a statement is possible only if an annular eclipse had been actually seen. There were two such that happened near Ujjain where he lived, in 496 CE and 550 CE. No astronomer ever predicted an eclipse as annular or total in the region. That is why there is hardly a record where the eclipse is specifically referred to as being annular or a total. The *Tantrasangraha* (1501 CE; Ramasubramanian & Sriram 2010) of Nilakantha Somayaji mentioned that when the angular diameter of the Sun is greater than that of the Moon, the eclipse is annular. The eclipse calculation acknowledges this disparity but stops short of eliciting how it may arise.

2. The earliest Indian records

The eclipses help fix the timelines in history arrived at by other means. There are innumerable stone and metal inscriptions recording genealogy, religious activity, heroic acts, gifting of land made on the cardinal days or on eclipses to increase religious merit, etc. from the middle of the first millennium (Shylaja & Ganesha 2016). Except for the dates, there is no eclipse phenomenology to be found in the records.

Presently, the earliest record of a solar eclipse belongs to the Nagardhan copper plates of the king Svamiraja, found in 1948. It mentions land donation made on the Chaitra



Figure 1. Virupaksha Temple, Pattadakal (Photo: Arian Zwegers; Wikimedia Commons).

amavasya in the Kalachuri year 322 that corresponds to the eclipse of 19 Mar. 573 CE (Mirashi 1949–50). It was a total over central India but mentioned nowhere so. Nagardhan narrowly missed the totality. The earliest Indian record specifically stating an eclipse as total is about that of 754 CE. It is on an inscription on a monolithic pillar of red sandstone in the Virupaksha Temple at Pattadakal (15.95°N, 75.82°E; Fig. 1) from the period of the Chalukyan king Kirtivarman II. Fleet 1894–95 suggested the total eclipse in the inscription as of 25 June 754 CE. A reference like ‘total’ can come from an actual viewing only. It turns out that Pattadakal actually witnessed the eclipse. It lay within the path of totality.

There is also a reference to an annular eclipse in an Indian literary classic of the 8th Century. The country in North India between the Ganges and Yamuna rivers had the prominent kingdoms of Thanesar (Kurukshetra) in the west and Kannauj to the east. The respective kings Lalitaditya and Yashovarman (r. 725–752 CE) were contemporary. Vakpatiraja, a poet in Yashovarman’s court composed a historical poem Gaudvaho in Prakrit (735 CE). While eulogizing his king, the poet brings in eclipse of the Sun as a simile (Suru 1975: 123 / Eng. part: 92–93). The reference is not just literary but quite probably the record of a solar eclipse. What makes it exceptional is its being portrayed as an eclipse with the characteristics of an annular – “The sun’s orb, pierced by (the black body of) Ketu, thus looking (from the earth) like a hole (vivaraḅha), drops down in the sky”. Such a description of an eclipse in an Indian literary work is unprecedented that its author, quite likely, may have had a chance to see. (Jacobi 1888) identified it as the eclipse of 14 Oct. 733 CE. It was actually on 14 Aug. 733 CE. Kannauj (27.018°N, 79.912°E), 40 km off the northern fringe of the path saw the eclipse as partial, but with a large magnitude at 0.963.

3. Solar cult temples

The Sun–god has been worshipped in India since antiquity. Solar cult temples can be found all over India. Many are near the Tropic of Cancer. In some cases, the assigned



Figure 2. The mural at the Gurudwara Baba Atal Sahib Ji, Amritsar; Guru Nanak is at lower left and the eclipsed sun near top-left (Photo: R.C. Kapoor, March 2017).

dates coincide with or are close to the dates of solar eclipses of large magnitude. One such was at Dashapura (Mandsaur) in the Malva region, built under the king Bandhuvarman in 436–37 CE, the contemporary of the Gupta Emperor Kumaragupta I (r. 414–455 CE). A guild of silk weavers had migrated from the Lata district to Dashapura having been attracted by the virtues of the kings of the country. Here, with great feeling of reverence and gratitude, they built a ‘House of the bright rayed Sun’ in 436–37 CE (Fleet 1886). Interestingly, just a year before, an annular eclipse had occurred on 14 Feb. 435 CE. Mandsaur (24.037°N, 75.077°E) lay close to the central line of the path and saw annularity lasting over 8 minutes.

4. Kurukshetra: the eclipse capital

Traditionally, Kurukshetra is the most benefic place for ritualism during a solar eclipse. A dip here on the day is believed as a commemoration of the eclipse that occurred during the Mahabharata war. Beginning the 11th Century, Kurukshetra received important patronage and turned into a centre of pilgrimage and solar eclipse festivals.

Guru Nanak (1469–1539 CE) was a great poet-saint and the founder of Sikhism. His teachings are enshrined in the form of poetry and extensive dialogue with the learned in the *Ādi Guru Granth Sāhib* (ĀGGS). The account of his life and teachings is found in the later traditional works called the *Janamsākhis*. He was a reformer who sought to dispel superstition. The *janamsākhis* refer to a solar eclipse that occasioned when Guru Nanak was visiting Kurukshetra. He used the occasion to address the pilgrims gathered there and sought to dispel their fears and superstitions associated with eclipses saying that it was a celestial phenomenon that had no influence on people’s affairs on the Earth. Examining the eclipses in the relevant period of 1498–1521 CE with respect to other records, the one of 13 Jan. 1507 CE appears to be the most probable, with mag. 0.43 over Kurukshetra (Kapoor 2017). The incident is beautifully depicted in a 19th century mural in the Gurudwara Baba Atal Sahib Ji at Amritsar (Fig. 2).

5. The Mughal records

Political astronomy is about the role and the influence unexpected celestial phenomena make on the royalty or the people's life and their response thereto. These were regarded ill omens for the rulers. On the eclipse day, the Mughal Emperor would be weighed against grain, butter, etc. to be given in charity, right from Akbar's time until Bahadur Shah Zafar in the 1850s. The Emperor Akbar (r. 1556–1605 CE) abstained from meat on the first day of the Solar month, on Sundays and the days of lunar and solar eclipses, etc. to respect the Hindu sentiments. The Akbarnama (II: 422–23) speaks about a bloody conflict among two rival factions of Hindu ascetics over right to their space at Kurukshetra's holy tank, the occasion being the solar eclipse of 09 Apr 1567. Jahangir, the fourth Mughal Emperor (r. 1605–27 CE), had interest in astronomy. He has recorded in his journal Tuzuk-i Jahangiri a few solar and lunar eclipses and two bright comets of Nov 1618 that he observed. The solar eclipses are of 15 Dec. 1610 and 29 Mar. 1615. The latter he says lasted 3h 12 min, reaching a magnitude of four fifths of the Sun. His figures are very close to the modern computed value of 0.794 for the magnitude and a nearly 3h duration of the eclipse as at Agra.

6. War eclipses

Eclipses during wars have influenced the rulers, the warriors and lives of people. In India, historians have seldom associated eclipses with wars. A total solar eclipse of 17 Oct. 1762 CE that occasioned on the day of the festival of lights has been thought by some historians to have cast a decisive impact on the course of history in Punjab over which the path of totality passed. This surely was a War Eclipse. Ahmed Shah Abdali (1722–72 CE), acclaimed one of the greatest warriors of Asia, was in those times attempting to establish Afghan rule in Punjab. The incident in question happened while the invader came over to Amritsar with 60000 strong army to decimate the Sikhs who, numbering about 50000, had gathered there to face him. A fierce battle took place but an unexpected darkening noon forced an early retreat by the Afghans to Lahore. The eclipse at a magnitude 0.99 had its impact. All one can say is that the eclipse ended the war early which otherwise would have caused even more bloodshed. It possibly saved Abdali's life too (Kapoor 2010).

In relatively modern times, one such situation emerged during India's Uprising against the British in 1857 that shook the foundations of the colonial power in India. Delhi fell to the British on 21 Sept. 1857 CE. Days before, there occurred a solar eclipse on 18 September, an annular. Over Delhi it reached 90% obscuration just when the war against the British had reached a very critical stage. The eclipse had its impact on the morale of the Indian soldiers fighting a pitched battle in Delhi. The eclipse preceded Mughal Emperor Bahadur Shah Zafar's capture from Humayun's Tomb by Captain William Hodson by three days. Under the circumstances, the September 1857 CE eclipse may be called a War Eclipse (Kapoor 2018).

The eclipses continue to be interwoven with the life and culture in India.

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