Appendix I

USE OF CHRONOGRAMS IN INDIAN INSCRIPTIONS
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Indian inscriptions may be classified into two major groups, viz. (1) dated and (2) undated. Dates are recorded in the inscriptions by using (a) words, (b) numerical notations and (c) both words and numerical notations. Some of the edicts of Aśoka bear reference to the regnal years by using words.1 The two Aramaic Edicts of Aśoka from Laghman or Lamghan, dated in the year 16, use numerical notations only.2 The Taxila inscription of the time of Pātika use both words and numerical notations for recording the date (year 78).3 Sometimes full verses have been employed to record dates. An early example is furnished by the famous Aihole Praśasti of Pulakeśin II.4

The practice of recording dates by using words symbolizing numbers was also known. These words may be called chronograms which mean an inscripton from which a date is got by adding value of letters. They also mean numbers expressed by words. We may refer in this connection to Bhūta-saṅkhya5. By Bhūtasāṅkhya (object numerals) is meant the use of objects having specific numerative quality to express numbers.

Early Indian mathematicians, astronomers, astrologers and others mention numbers by using words which indicate particular numbers. According to G. H. Ojha6, the antiquity of the practice of using such words goes back to the time when Satapatha Brāhmaṇa7 was being written down. Ojha refers to the Taittirīya Brāhmaṇa8, Chhandakasūtra of Piṅgala9, Brahmasphuṭasiddhānta of Brahmagupta,10 the Śisyadhīvṛddhi of Lalla11, and Pañcha-Siddhāntikā of Varāhamihira,12 which bear evidence to the practice of using symbolic words for numbers. This system is also found in the Chhandomaṇḍari.13 It may be pointed out that the manuscript of Yavanajātaka bears the date of composition of the text in the following manner: Nārāyaṇāṅkendumitābdadrīṣṭahm ...14 i.e. in the year 1915 and as Vishnuvaraharikshe16 i.e. in the year 7117. It is not clear whether the date in chronograms had been copied down from earlier manuscripts of the text. In the absence...
of concrete evidence, it will be too hazardous to conclude that chronograms were used in the 3rd century A.D. Early epigraphic documents which have come down to us, do not, however, follow this system.

The custom of recording dates by using chronograms is found extensively in the inscriptions of the medieval period. The practice was also common with the scribes of manuscripts who used to record dates in the colophons by using words symbolizing numbers. In computing the dates in such cases, the rule of anikānam vāmā gati has to be applied, though in some cases the vāma-gati principle is found to have been ignored.

One Pandyyan inscription from Tirupparangunram (4 miles South West of Madurai) may be taken into consideration in this connection. In this inscription the date is expressed partly in words and partly in chronograms i.e., Taishe māsē sahasratītaya vasu-śatāraivatsarair-veda-sarikhyais-saptatīyātavatavam ...

Thus it may be concluded that the use of chronograms for recording dates in Indian inscriptions can be traced at least from the first half of the 8th century A.D., though exclusive use of chronograms is found for the first time in the Lapha plates of the reign of the Haihaya king Prithūdeva. It is dated in the (Vikrama) samvat 806 (=A.D. 749). The date has been given both in numerals and chronograms. It mentions sarhvatsare ras-ābhra$tatlte Maghasit-adhike, i.e., “on the first day of Magha in the expired year 806 (aṣṭa = 8, abhra = O, rasa = 6). The problem is that the record has been proved to be a spurious one.

Then the Kadapha plates of Prabhutavarsha may be taken into consideration in this case. The date has been recorded in the following manner: Śaka-nṛipa sarīvatsaresu śara-śikhi-munisu-vyatīte, i.e., “when 735 years (of the era) of the Śaka king had elapsed (= A.D. 813). Thus partial use of chronograms
in Indian inscriptions can be traced back from at least A.D. 746, while full use of chronograms for recording dates in Indian epigraphs cannot be dated earlier than the beginning of the 9th century A.D. It may be pointed out that in later inscriptions the dates given in chronograms are in most cases confirmed by numerical notations.

Some inscriptions from the ancient Kambuja country (Cambodia) and parts of Laos and Thailand are also dated in chronograms only. The earliest such inscription is the Bayang temple inscription\textsuperscript{27}, dated \textit{Rasadasraśarais Šakendra varshe...28}, i.e., “in the Šaka year 526 (=A.D. 604),” (\textit{Rasa} = 6, \textit{Dasra} = 2, and \textit{Šara} = 5 i.e. 526). It was previously wrongly computed as the Šaka year 546.\textsuperscript{29} The above inscription may be taken as the earliest instance of using chronograms in cambodian records. It is interesting to note that most of the inscriptions from Kambuja are dated in chronograms only. Thus use of chronograms in Cambodian inscriptions may be traced at least from the first decade of the 7th century A.D.

The idea of using chronograms must have travelled from India to the South-East Asian countries. It can thus easily be postulated that the system was current in India before the 7th century A.D. Unfortunately none of the Indian inscriptions before the 8th century A.D. bears evidence to the use of chronograms.

The Bitragunta grant of Sārīgama II\textsuperscript{30} is dated \textit{Šakābde nāgaśailadhyumāni parimite 1278 durmukhābde trutiyye māsi} i.e. “In the Šaka year which was measured by the elephants (8), the mountains (7) and the suns (12) (in figures) 1278 - in the (cyclic) year \textit{Durmukha}, in the third month”\textsuperscript{31}. Another example for this system of dating is found in an inscription in the Delhi Museum (dated in the year 1384 of V.S.)\textsuperscript{32}. It belongs to the time of Muhammad-bin-Tughlaq.

The \textit{Sadukti-karnāmrita} of Śrīdharaśa\textsuperscript{33} is dated as \textit{Śāketa saptavirāśatyadhika satopetadaśaśate saradāṃ ŚṛīmaLakṣmaṇa- senakshitipasya rasālōvirāśo(ab)de} i.e. “In the year 1127 of the Šaka era and in the year 27 (\textit{rasa} = 6, \textit{eka} = 1, \textit{virāśa} = 20, 6+1+20=27) of the reign of Lakṣmaṇasena. Here the peculiarity
is that the date of completion of the work has been given partly in words and partly in symbolic words signifying number (i.e. \( \text{rasa} = 6 \)).

Another system of dating is also recorded in Indian inscriptions. In this system the date is given by a particular word with a connected meaning. Value is given to the consonants only of the Sanskrit alphabet.\(^{34}\) The order of the letters is from right to left; in double letters the last pronounced consonant only counts and vowels have no value in this system. The earliest reference to this notation (A.D. 1187) is found in the Shadguruśishyas commentary on the \( \text{Rigveda Anukramanikā}^{35} \) This method was also followed in a kind of \( \text{anukramani} \) which exists for the \( \text{Rig}, \text{Yajuh} \) and \( \text{Sāma} \) Vedas, but apparently in South India only.\(^{36}\)

An inscription of Tammusidhi\(^{37}\) refers to the date as \( \text{Sarayogye Šakābde} \) i.e. "In the Šaka year (denoted by the chronogram) \( \text{Sarayoga} \) (i.e. 1127).\(^{38}\) Here the word \( \text{Sarayoga} \) means s=7, r=2, y=1 and y=1 i.e., 1127. Other words used as chronograms in Indian inscriptions are \( \text{Dhīrayāin}^{39} \) (i.e. 1129), \( \text{Dehavyāpya}^{40} \) (i.e. 1188), \( \text{Tuṅgaśrīkā} \) (i.e. 1236)\(^{41}\), \( \text{Cholopriya} \) (i.e. 1296),\(^{42}\) \( \text{Dānasāghya} \)\(^{43}\) (i.e. 1308), \( \text{Raṅgaloka}^{44} \) (i.e. 1332), \( \text{Tattvāloka}^{45} \) (i.e. 1346) and \( \text{Dhivaloka} \) (i.e. 1349)\(^{46}\) etc. This system of dating was commonly used in the 15th century, particularly in South India.

It may be pointed out that there was another system of dating applied principally to numbering the pages of manuscripts. This system was followed in Malabar and also occasionally in the Telugu country. According to this system, the consonants (with short-a, and in their usual order) stand for 1,2,3 etc. upto 34, then they are repeated with long ā, i.e., kā = 35, gā = 37 and so on.\(^{47}\) This system is not noticed in inscriptions. It is interesting to note that Āryabhata also used the system of representing numbers by letters of the alphabet.\(^{48}\) Two systems developed in South India on the basis of representing numbers by letters. These are (1) \( \text{Katapayādi}^{49} \) and (2) \( \text{Nannādi}^{50} \)

The \( \text{Katapayādi} \) system derives it name from letters \( \text{Ka-ta-pa-ya} \)
which are taken to represent the digit one and the further letters in the respective groups commenced by ka, ta, pa and ya to represent further digits. This system is based on the following verses.\(^{51}\)

1. \textit{na-ñav-achaś cha śūnyāt; saṅkhyaḥ katpayādayah/ miśre tūpāntya-hal saṅkhyaḥ; na cha chintya hal asvrah// 'na, ŋa and the vowels (achaḥ) (represent) zero. ka, ta, pa, ya and the letters following them represent the digits. In a conjunct consonant, the penultimate consonant (hal) represents the digit. A consonant (standing alone), without a vowel following, is to be discarded (as representing no digit).}

2. \textit{Kaṭapya-vargabhavair iha piṇḍāntair aksharair aṅkāḥ/ ne ŋe śūnyam jñeyam tathā svarāḥ kevale kathitaḥ//}

'Numbers are denoted, herein, by groups of letters formed by \textit{ka, ta, pa, ya} and the letters (commencing) from them. Na and ŋa are to be understood as (representing) zero; so also pure vowels (i.e., when not attached to consonants). The inscriptions relevant to our period do not mention this system. But some of the inscriptions of medieval period are dated according to this system. The Kandiyur inscription of Kodavarman\(^{52}\) is dated in the 1,511, 564\textsuperscript{th} day of the Kali-yuga era expressed by the Katapayādi chronogram \textit{Vishampunya mekam} in which \textit{va} = 4, \textit{sha} = 6, \textit{ma} = 5, \textit{pa} = 1, \textit{ya} = 1, \textit{ma} = 5 and \textit{ka} = 1 and they are to be read from right to left.

There is also a definition for the \textit{Nannādi} notation:\(^{53}\)

\textit{Na-nna-nya-shka-jhra-hā(ha)-gra-pra-dre-ma/tha-lil(a)-pta-ba-tra (tree)-tri-cha-na-ṁa/}

According to this system the ten letters of the first line had the value respectively of the numbers from 1 to 10 while the others in the second line represented 20, 30, 40, 50, 60, 70, 80, 90, and 100. This system was generally employed in paginating manuscripts\(^{54}\). There was also a third system of paginating manuscripts prevalent in Ceylon.\(^{55}\)

Although chronograms, i.e. numbers used by symbolic words or object numerals or letters, were widely used throughout India in early medieval inscriptions in Indian languages like Sanskrit,
Tamil etc., they went out of use apparently because of their obscurity. In the inscriptions of medieval Bengal the dates in most cases if given in chronograms are always supplemented by dates given in numerals. It may be regarded as an attempt on the part of the composer or authors to make the date understandable to the lay man. Thus numerals or numerical notations were definitely easily understood by the people. Use of chronograms became restricted only to versified compositions mainly in Sanskrit.

NOTES AND REFERENCE

2. B. N. Mukherjee, SAEA, pp. 12, 14.
4. EI, vol. VI, pp. 4ff.; cf. vv. 33-34.
7. Ś.Br., 13.2.2.1.

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27. R. C. Majumdar, *Inscriptions of Kambuja*, No. 8, pp. 8-10.
34. A. C. Burnell, *Elements of South Indian Palaeography*, pp. 79-80.
35. *Ibid.*, p. 79:
42. *EI*, vol. IV, No. 27, p. 203.
44. *EI*, vol. XIV, No. 2, pp. 68-83.
47. A.C. Burnell, *op. cit*, p. 80.
49. D. C. Sircar, *op. cit*, p. 222. The Kandiyur inscription of Kodavarman gives the date 1,511, 564th day of the Kaliyuga era according to this system as ‘Visamampuyamekam’ in which \( Va = 4, \) \( sha = 6, \) \( ma = 5, \) \( pa = 1, \) \( ya = 1, \) \( ma = 5 \) and \( Ka = 1 \) and they are to be read from right to left. See G. Bühler, *Indian Palaeography*, p. 87; G. H. Ojha, *op. cit*, 122ff; *IJHS*, No. 1, March, 1996, vol. 31, p. 96; *Travancore Archaeological Series*, vol. I, p. 294. See also the Srirangam inscription of (*EI*, vol. XXIX, pp. 71ff.) Sadāśivarāya. (Setu-Vendra i.e. \( Sa = 7, \) \( ta = 6, \) \( va = 4, \) and \( ya = 1, 52 = 1467)\)
55. *Ibid.*.
56. A. K. Bhattacharyya, *A Corpus of Dedicatory Inscriptions from Temples of West Bengal*, p. 72. Inscription on Vishnu (locally known as Dharma thākur) temple, Kabilaspur, Birbhum, A.D. 1643 records the date as “Griśa-mukha-Sanmukhānana-sara-Indu-sāṃkhya-ānvīteŚaka-bda-nikare ...” in L.1, which means in the collection of Śaka years added
to by Giriśamukha (=5), Saṃmukhānana (=6), Śara (=5) and Indu (=1) i.e., 1565 Śaka era. The date '1565' in L.6., only confirms the date mentioned above.