

SANSKRIT KĀLĀ- « TIME », DRAVIDIAN KĀL « LEG »,
AND THE MYTHICAL COW OF THE FOUR YUGAS

With some reservation expressed through the word « wohl », Manfred Mayrhofer in his *Concise Etymological Sanskrit Dictionary*¹ decides for the Indo-European etymology of the Sanskrit word *kālā-* m. « time » proposed by F.B.J. Kuiper, referring in support of this view also to the publications of V. Machek and H.W. Bailey. The said explanation derives *kālā-* from the Indo-European root **q^wel-* « to move », under the hypothesis that « time » was conceived as « turning around »: Old Church Slavonic *vrěmę* « time », which is a derivative of the root **wert-* « to turn » is quoted as an analogy, and reference is also made to phrases mentioning the turning of the wheel of time in Indian literature, e.g. *kālacakram pravartate* in the *Mahābhārata* (4,1607). In addition to this etymology, Mayrhofer mentions (in smaller print) a number of other explanations which, however, seem to him for one reason or another less preferable. In this paper, I am not going to discuss the Indo-European etymologies in any greater detail, nor to adduce arguments against them other than the general remark that they all suffer from the lack in the other Indo-European languages of cognate works having the meaning « time », as well as from the absence of this word in the old portions of the *Ṛgveda*. The word *kālā-* is namely attested in the *Ṛgveda* only once, in the tenth book, which is admittedly much later than the main body of the collection².

Instead, my intention is to present some positive evidence in favour of a Dravidian derivation which was suggested by H. Gundert in a

1. MANFRED MAYRHOFER, *Kurzgefasstes etymologisches Wörterbuch des Sanskrit*, I, Heidelberg, 1956, p. 202 f.

2. Cf., e.g., JACOB WACKERNAGEL, *Altindische Grammatik: Introduction générale*, nouvelle édition du texte paru en 1896, au tome I, par Louis Renou, Göttingen, 1957, p. 4 ff., with the notes a.l.

footnote to his paper entitled « Die dravidischen Elemente im Sanskrit », which was published over a century ago in 1869³. Gundert remarked:

« S. *kāla* schwarz, im Süden immer *kāla* gesprochen, stammt von D. *kāl* "Schwärze", dem Verbalnomen von $\sqrt{\text{kar}}$ schwarz sein. Anders erkläre ich *kāla* Zeit, welches einfach aus D. *kāl* "Fuss, Viertel, Ort, Zeit" (*orukāl* einmal, je) entlehnt scheint. » (p. 520, n. 1)

Mayrhofer refers to this note with the following words:

« Ansprechend, aber wegen des Alters und der schwerlich entlehnten Bedeutung von *kālā-* kaum vertretbar ist Gunderts Herleitung (ZDMG 23, 520, Anm. 1) aus drav. **kāl* (kan. *kāl* usw.) "Fuss, Viertel, Zeit"; für dravidische Herkunft von *kālā-* auch M. Collins, Dravidic Studies (Univ. of Madras) 4, 7 » (I, p. 203).

I shall here pass by the major part of Marc Collins' paper mentioned by Mayrhofer, which is entitled *On the Octaval System of Reckoning in India* (Madras, 1926, Dravidic Studies, I). Collins' suggestions on the etymological connection between a large number of words supposedly derived from Dravidian *kāl/kal* (p. 3-16) in my opinion remain unconvincing; his conclusion that the word *kāl(am)* « time » originally stood for the moon as the great time measurer also differs from my contention.

Some statements by Collins⁴, however, give occasion to remarks concerning the phonetic and morphological shape of the respective Dravidian words *kāl* and *kālam* meaning « time », which will be listed below. *Kāl* is in full agreement with one of the basic types of Proto-

3. « Zeitschrift der Deutschen Morgenländischen Gesellschaft », Bd. 23 (1869), pp. 517-530.

4. Because Collins' study is not so easily accessible, I quote the respective passage here in extenso: (p. 6 f.) « Then there are the words *kāl* and *kālam*, meaning 'time'. The first of these is hardly an independent word. It is used either (1) as a particle which, in composition with a preceding verbal form, becomes a substitute for what in an Indo-germanic language would be a conjunction ('when' etc.), or (2) in composition with *oru*, 'one', with the meaning 'once, sometimes': in Malayalam this last appears also as *ori-kkal*, with *kāl* shortened to *kal* [footnote omitted]. The second, *kālam*, is the ordinary word for 'time', and denotes also 'day-break'. This word, however, unlike *kāl* (*kal*), which can hardly be regarded as other than purely Dravidic, is ambiguous. The termination *-am* is, of course, not to be confounded with the similar neuter termination of Sanskrit. It belongs certainly to Tamil and has counterpart in the other Dravidic languages. It forms primary and secondary derivatives such as *nil-am* 'ground, land, earth', from *nil*, 'stand'; *maṛ-am*, 'evil, sin', by the side of *maṛu*, 'spot, blemish'; *iṅ-p-am*, 'delight', by the side of *iṅ-pu*, 'delight', from *iṅ*, 'sweet'; *nēr-am*, 'time' from an early *nāyir[u]*, later *nāyiru*, 'sun'. It is also made the distinctive ending of nouns denoting inanimate objects borrowed from Sanskrit, when the Sanskrit noun ended in the nominative singular in *-as* (in pause *-aḥ*) whether they were neuter, as *manam*, 'mind' [footnote omitted], from Skt. *manas*, or masculine, as *pākam*, 'share', from Skt. *bhāga*. It is clear that *kālam* might well be a tatsama of Skt. *kāla*, 'time'. But whether it is a tatsama of this word or not, it cannot, I feel, be separated from *kāl*, 'time': in other words Skt. *kāla* (like Skt. *kalā*) must be regarded as Dravidic in origin ».

Dravidian roots (which may function as both verbs and nouns), namely CVC, occurring normally free in this particular shape⁵. Also all its phonemes are reconstructed for Proto-Dravidian, and can there occur in these very positions⁶. These points are most eloquently proved by the entirely homophonous word *kāl* meaning « leg », which occurs in practically all Dravidian languages and which will be discussed in a moment. With regard to *kālam*, Collins is certainly right in observing that the ending *-am* is a genuine Dravidian suffix of non-rational nouns: it can be shown to go back to Proto-Dravidian⁷. Normally, « when a derivative vowel is added to [the root of the type] (C)VC-, the radical vowel is shortened and the type falls together with (C)VC- », which « can occur free and bound »; « this morphophonemic shortening of long radical vowels occurs in most Dr. languages »⁸. Yet there are numerous parallels to show that also *kālam* in spite of its long vowel can be genuine Dravidian, cf. e.g. *kōl* « raft, float » and *kōlam* « id. » (*DED* 1853)⁹, or *nāṇ* « sense of shame, bashfulness » and *nāṇam* « id. » (*DED* 3014).

The chronological difficulty that restrained Mayrhofer from accepting the possibility of a Dravidian etymology has effectively been set aside in the meanwhile, for it has been proved beyond doubt that the Vedic texts, including the family books of the *Ṛgveda*, bear evidence of a Dravidian substratum influence¹⁰. Both textual-linguistic and archaeological evidence suggest that the Aryans who brought the *Ṛgvedic* poetry to India were preceded by earlier waves of Aryan immigrants who had arrived at India many centuries earlier. The Dravidisms of the *Veda* seem to be derived from the speech of these earlier Aryans, who had fused with the North-Dravidian speaking descendants of the Indus civilization: this hybrid tradition of pre-*Ṛgvedic* India seems to be represented by the new elements that come to the surface in the second phase of the Vedic literature (i.e. the late books of the *Ṛgveda*, the *Atharvaveda*, and the *Brāhmaṇa* texts, including the *Samhitās* of the *Yajurveda*) as well as the much later fixed Epic texts. These new elements are both ideologically and dialectally different from the old

5. Cf. KAMIL ZVELEBIL, *Comparative Dravidian Phonology*, The Hague, 1970 (Janua Linguarum, Series practica 80), p. 35, and id., *Problèmes fondamentaux de phonologie et morphologie des langues dravidiennes* in « Bulletin de l'École française d'Extrême-Orient » 60, 1973, p. 1-48, esp. pp. 25-35 « Les racines dravidiennes monosyllabiques ».

6. Cf. ZVELEBIL, 1970 (n. 5), p. 35 f., 76 f.

7. Cf. S. V. SHANMUGAM, *Dravidian nouns (A comparative study)*, Annamalainagar, 1971 (Annamalai University, Department of Linguistics, Publication No. 25), p. 244 f.

8. Cf. ZVELEBIL, 1970 (n. 5), p. 35 and 36. Cf. also ZVELEBIL, 1973 (n. 5), pp. 36-48 « Alternances morphophonémiques dans les bases radicales du dravidien ».

9. *DED(S)* = T. BURROW AND M. B. EMENEAU, *A Dravidian Etymological Dictionary*, Oxford 1961; id., *Supplement*, Oxford 1968. Cf. also T. BURROW AND M. B. EMENEAU, *Dravidian Etymological Notes: Supplement to DED, DEDS, and DBIA*, Pt. 1-2, in « Journal of American Oriental Society », 92, 1972, pp. 397-418 and 475-491.

10. Cf. particularly F. B. J. KUIPERS, *The genesis of a linguistic area*, in « Indo-Iranian Journal », 10: 2/3, 1967, p. 81-102.

Rgveda. I cannot here go further into these questions, but refer the reader to a more extensive discussion published elsewhere¹¹.

From the phonetical, morphological, and chronological point of view *kāl* and *kālam* could, hence, be genuine Dravidian words and forms, while the semantic aspect about which Mayrhofer also had qualms will be the chief issue of this paper. However, if one accepts an Indo-European derivation (which has its weaknesses, as noted above), it is possible to consider both forms only as Dravidian adaptations of the borrowed Indo-Aryan word. This is, in fact, the point of view adopted by T. Burrow and M.B. Emeneau, who have excluded the etymon *kāl/kālam* « time » from their *Dravidian Etymological Dictionary*⁹, and grouped it separately in the publication entitled *Dravidian Borrowings from Indo-Aryan*¹² as item no. 97. We shall in a moment return to the attestations recorded there from eight Dravidian languages which in addition to the purely Southern group comprise also Tuḷu and Telugu; at least the latter is a Central Dravidian language heavily influenced by South Dravidian¹³.

On the other hand, the homophone *kāl* « leg, foot, quarter » mentioned in this connection by Gundert, has been recognized by Burrow and Emeneau as a different etymon of genuine Dravidian origin and included in the *DED* (item no. 1238), which together with its two supplements⁹ provides us with the following material:

- Tamiḷ *kāl* leg, foot, base (of tree), quarter, family, relationship
 Malayāḷam *kāl* leg, foot, stem, pillar, quarter
 Kōta *kāl* leg, foot, base (of tree), quarter
 Toda *kōl* leg, foot, quarter, family; *mēṇ gōṣ* shade (lit. foot) of tree;
kōlk ir- (child) sits on mother's leg to defecate; *kōṣ* excrement
 Kannaḍa *kāl* foot, leg down to the knee, quarter
 Koḍagu *kālī* leg, foot, quarter
 Tuḷu *kāru* leg, foot; *kālu* quarter
 Telugu *kālu* leg, foot, quarter; *kālari* foot-soldier¹⁴
 Kōlāmī (Kin.) *kāl* leg, foot
 Parjī *kēl* (pl. *kēlul*) leg
 Gabdā (Oll.) *kāl* (pl. *kālgil*) leg

11. Cf. ASKO PARPOLA, *On the protohistory of the Indian languages in the light of archaeological, linguistic and religious evidence: an attempt at integration*, in *South Asian Archaeology 1973*, ed. by J. E. van Lohuizen-de Leeuw and J. M. M. Ubaghs, Leiden, 1974, pp. 90-100.

12. *DBIA* = M. B. EMENEAU AND T. BURROW, *Dravidian Borrowings from Indo-Aryan*, Berkeley and Los Angeles, 1962 (University of California Publications in Linguistics, Vol. 26).

13. Both Tuḷu and Telugu have, until recently, been considered as Central Dravidian languages, though with some reservation in regard to Tuḷu; cf. e.g. M. B. EMENEAU, *The South Dravidian Languages*, in *Proceedings of the First International Conference Seminar of Tamil Studies, Kuala Lumpur - Malaysia*, April 1966, Vol. II, Kuala Lumpur, 1969, pp. 563-571, p. 563. P. S. SUBRAHMANYAM, *The Position of Tulu in Dravidian*, in « *Indian linguistics* » 29, 1968, pp. 47-66, however, argues that Tuḷu is in fact the earliest offshoot of South Dravidian.

14. Cf. also Ta.Ma.Ka. *kāl-āl* 'foot-soldier, infantry', and Ta. *kālōr* 'infantry'.

Gōṇḍī *kāl* foot, leg

Koṇḍa *kāl* leg

Pēngo *kāl* leg

Maṇḍa *kāl* leg

Kuī *kāḍu* leg, foot

Kuvi (P.) *kālu* (pl. *kālka*) leg

? Brāhūī *trikkal* tripod of three sticks on which tent its hung.

Kāl « leg » is thus known from 18 Dravidian languages representing all the principal branches, which shows beyond any doubt that this word is very ancient in Dravidian. In the Indo-Aryan languages, on the other hand, there is no similar word with these meanings, so that the possibility of a borrowing from Indo-Aryan is in this case totally excluded. This fact is important, for my endeavour in the following is to show that *kāl* (and *kālam*) « time » is a derivative of this word, and hence originally Dravidian.

The meaning « leg », which is attested for all the languages, is obviously the primary one. The meaning « quarter » is clearly also relatively old. In Tamil it occurs already in the Caṅkam texts composed during the first half of the first millennium AD, cf. e.g. *Paripāṭal* 3, 77-80:

pāleṇak kāleṇap pākeṇa voṇreṇa

iraṇṇeṇa mūṇreṇa nāṇkeṇa vainteṇa

āreṇa vēleṇa veṇṇeṇat toṇṇeṇa

nālvakai yūliyeṇ navirruṇ cirappinai

« O (lit., emptiness), 1/4, 1/2, 1,
2,3,4,5,/ 6,7,8,9,/: (you, Tirumāl, have)

the excellence expressed by the numbers of
the ages [Skt. *yuga*] of four kinds ».

The word *kāl* is commonly used for any sort of quarter, and it is attested in this meaning in all the six purely South Dravidian languages from which the word is known, and in addition in Tuḷu and Telugu. Since evidence from North Dravidian in particular but also from Central Dravidian, which both consist of tribal languages, is very scanty, it is in my opinion not quite legitimate to draw the conclusion that this semantic development has taken place in South Dravidian only. I think some indirect evidence can be adduced to testify the presence of the meaning « quarter » in early North Dravidian as well. I mean the evidence supplied by what seems to be a calque or translation loan in the second layer of the Vedic literature. Before proceeding to the examination of this evidence, I should like to draw attention to a Dravidian word which the *DED* (no. 1243) has listed separately, but which appears to be a derivative of *kāl* « leg ». This word, so far attested from Tamil and Malayāḷam only, is *kāli*, which in Tamil means « cow¹⁵, herd of

15. According to the *TL* = *Tamil Lexicon* published under the authority of the University of Madras, 6 vols. and supplement, Madras, 1924-1939, attested in *Tēvāram* 745,3.

cows (as being quadrupeds)¹⁶ », and in Malayālam « cow, cattle, she-buffalo ». Cf. also Tamil *kāl-mātu* « cattle [= *mātu*] as distinguished from *mātu* meaning gold »¹⁷.

It seems obvious to me (as it apparently has seemed to Burrow and Emeneau) that *kāl* « quarter » is derived from *kāl* « leg », and that the semantic connection is provided by cattle and other quadrupeds having four legs. The word *catuṣpad* « quadruped » is a regular name for animals in all parts of the *Rgveda*, where it is often contrasted with *dvipad* « biped » denoting human beings¹⁸. In the *Brāhmaṇa* texts four-footed cattle is the standard symbol for number four, cf. the following passages:

catuṣpādo vai paśavaḥ, Maitrāyaṇī Saṃhitā 1,5,10; 3,2,1; 3,7,5
catuṣpādā vai paśavaḥ, Aitareya-Brāhmaṇa 5,3; *Aitareya-Āraṇyaka*
1,1,2

catuṣpādā vai paśavaḥ, Jaiminīya-Brāhmaṇa 1,160

catuṣpādāḥ paśavaḥ, Taittirīya-Brāhmaṇa 2,1,3,5

catuṣpādāḥ paśavaḥ, Pañcaviṃśa-Brāhmaṇa 3,8,3; *Aitareya-Brāhmaṇa* 2,18; 3,31; 5,17; 5,19; 6,2

atho catuṣpādāḥ paśavaḥ, Gopatha-Brāhmaṇa 2,1,4; 2,3,16

catuṣṭayā vai paśavo 'tha catuṣpādāḥ « cattle are fourfold and also four-footed », *Kauṣītaki-Brāhmaṇa* 16,3,11; 16,28,10; 16,29,8

tad ye catuṣpādāḥ paśavas, tair..., *Satapatha-Brāhmaṇa* 6,8,2,7

*catuṣpādā*¹⁹ *vā aśvās santaś catuṣśaphāḥ; te ye catuṣpādāḥ*¹⁹
*paśavaś catuṣśaphās tān evaitenāvarunddhe... catuṣpādā*¹⁹

*vai paśavo vairājāḥ; te ye catuṣpādāḥ*¹⁹ *paśavo vairājās tān...*, *Jaiminīya-Brāhmaṇa* 2,173

somaś caturakṣarayā (*reṇa TS) *catuṣpadaḥ paśūn udajanat,*

Kāthaka 14,4; *Maitrāyaṇī Saṃhitā* 1,11,10; *Taittirīya-Saṃhitā*
1,7,11,1

*catasro diśaś, catuṣpādāḥ*²⁰ *paśavaḥ, Jaiminīya-Brāhmaṇa* 1,131; 2,431

diśaḥ pādāḥ « the (four cardinal) directions are the feet

(of the cosmic sacrificial horse) », *Taittirīya-Saṃhitā* 7,5,25,1

ṛtubhir iti catuś, catuṣpada eva paśūn prīṇāti... ṛtubhir

iti catus, tasmāc catuṣpādāḥ paśava ṛtūn upa jīvanti

« 'For the seasons', four times (he says); verily he delights

16. Note this explanation given in *TL* but omitted in *DED*.

17. *TL* citing *S.I.I.* II, 2, 49.

18. Cf. HERMANN GRASSMANN, *Wörterbuch zum Rig-Veda*, Leipzig, 1873 (-1875), and A. A. MACDONELL and A. B. KEITH, *Vedic Index of Names and Subjects*, London, 1912, s.v.

19. *Jaiminīya-Brahmana of the Samaveda*, complete text critically edited for the first time by Raghu Vira and Lokesh Chandra, Nagpur, 1954 (Sarasvati-Vihara Series, 31), reads *catuṣpādā(h)* in these cases, but in all except the first of them the MSS. Kha and Ga are recorded to have the reading *catuṣpādā(h)*

20. In 1, 131 the ed. (n. 19) reads *catuṣpādāḥ* against o *pādāḥ* in the MSS. Ya, Va, Sa.

four-footed cattle... 'For the seasons', four times (he says); therefore four-footed cattle depend upon the seasons » (transl. A. B. Keith), *Taittirīya-Saṃhitā* 6,5,3,2.

It is but natural to call cattle or horse « four-footed », and the parallel expressions in other Indo-European languages such as Latin *quadrupes* m.f. « four-footed animal, esp. horse » and Greek τετράπους « four-footed » (used of cattle and other animals, and as n. subst. « quadruped, beast ») make it likely that Vedic *catuspad* is an old inherited word. It is, on the other hand, interesting and significant to note that Latin *pes* « foot (of men and animals) » and Greek πούς « id. » do *not* have the meaning « quarter »²¹, which Sanskrit *pad-*, *pada-* and *pāda-* « foot » have, and which is first attested in the late books of the *Rgveda*. Here (1,164,23) as usually in the later *Veda*, these words are used in the restricted meaning of a « quarter of a *verse* »²². This seems to stay in relation to the fact that the Indo-European cognates (Lat. *pes*, Gr. πούς, etc.) do have the meaning of « prosodical or metrical foot » and « foot » as a measure of length. Already in the famous *puruṣa* hymn (*Rgveda-Saṃhitā* 10,90,3-4: *Atharvaveda-Saṃhitā* 19,6,3,2), however, « foot » clearly means « quarter » in general: *pādo 'sya viśvā bhūtāni, tripād asyāmṛtaṃ divi* « a foot of him is all beings; three feet of him are what is immortal in the sky » (transl. W. D. Whitney). Similarly, in *Satapatha-Brahmaṇa* 11,3,3,3, it is said of a *Brahmaṇa* entering on a *Brahmacārin's* life: *caturdhā bhūtāni praviśati: agniṃ padā mṛtyuṃ padācāryaṃ padātmany evāsya caturthaḥ pādaḥ pariśisyate* « He enters beings in four parts: with one fourth part (he enters) the fire, with another part death, with another part his religious teacher; and his fourth part remains in his own self » (transl. Eggeling). There are plenty of further references, but I would like to quote just two more from the *Veda*. One is Yāska's *Nirukta*, where we are expressly told that the word *pādaḥ* also signifies a quarter of division and that from the analogy of a quadruped: *paśupādaprakṛtiḥ prabhāgapādaḥ* (2,7).

Another very interesting reference is the bargain for soma in the course of the soma sacrifice²³, where the « monetary » unit is a cow. The respective passage of the *Satapatha-Brahmaṇa* (3,3,3,1 ff.) reads in Eggeling's translation as follows:

« 1. He bargains for the king (Soma)... He says, 'Soma-seller, is thy king Soma for sale?' — 'He is for sale', says the Soma-seller. — 'I will buy him of thee!' — 'Buy him!' says the Soma-seller. — 'I

21. Cf. e.g. HERMANN MENGE, *Menge-Gühtling: Enzyklopädisches Wörterbuch der lateinischen und deutschen Sprache* I, 11. Aufl., Berlin, 1959, and H. G. LIDDELL and R. SCOTT, *A Greek-English Lexicon*, new ed. by Jones and R. McKenzie, Oxford, 1940, s.v.

22. References in O. BÖHTLINGK and R. ROTH, *Sanskrit-Wörterbuch*, 4. Theil, St. Petersburg, 1865, s.vv.

23. Cf. W. CALAND and V. HENRY, *L'agniṣṭoma*, Paris, 1906-07, § 33.

will buy him of thee for one-sixteenth (of the cow)'. — King Soma, surely, is worth more than that!', says the Soma-seller. — 'Yea, King Soma is worth more than that; but great, surely, is the greatness of the cow', says the Adhvaryu.

2. 'From the cow (comes) fresh milk, from her boiled milk, from her cream, from her sour curds, from her sour cream, from her curdled milk, from her butter, from her ghee, from her clotted curds, from her whey'.

3. 'I will buy him of thee for one hoof!'. — King Soma, surely, is worth more than that!' says the Soma-seller. — 'Yea, King Soma is worth more than that, but great, surely, is the greatness of the cow', replies the Adhvaryu; and having (each time) enumerated the same ten virtues, he says, 'I will buy him of thee for one foot' — 'for half (the cow)' — 'for the cow!'. — King Soma has been bought!' says the Soma-seller...

4. And as to his bargaining five times: the sacrifice being of equal measure with the year, and there being five seasons in the year, he thus obtains it (the Sacrifice, Soma) in five (divisions), and therefore he bargains five times ».

Kātyāna's *Śrautasūtra* (7,8,6-10), of course, records the same series: 1/16 (*kalā*), 1/8 (*śapha*), 1/4 (*pad*), 1/2 (*ardha*), 1/1 (*gauḥ*). The *Taittirīya Sūtras* (e.g. *Āpastamba* 10,25,4-9) have a slightly different practice: 1/16 (*kalā*), 1/12 (*kuṣṭhā*), 1/8 (*śapha*), 1/4 (*pad*), and 1/1.

The above evidence clearly proves the intimate relationship between the meaning « quarter » and « leg » or « foot », especially cow's foot. But let us now turn to the Dravidian attestations of the words *kāl* and *kālam* « time » collected by Emeneau and Burrow (*DBIA* no. 97)²⁴:

Tamiḷ *kālam*, *kālai* time, season, opportune moment; *kāl* time; bloom, freshness, beauty; turn

Malayāḷam *kālam* time, season, year; *kāl* time

Kōta *kālm* (obl. *kālt*-) time, opportunity

Toda *kōlm* (obl. *kōlt*-) time; *mun gōṣṭk* in ancient times

Kannaḍa *kāla* time, year, season; *kāl* time, opportunity

Koḍagu *kāla* year

Tuḷu *kāla* time, season

Telugu *kālamu* time, season, opportunity.

It may be noted that *kāl* « time » is known in Tamiḷ from the earliest lexicographer Piṅgala (latter part of the first millennium AD), but in the sense of « Kāla, Yama » already from the Caṅkam texts (*Aiṅkurunūru* 116,4); in modern Tamiḷ *kāl* normally occurs only as an ending of the

24. There are no additions in the supplement of JAOS 92 (n. 9).

verbal participle, meaning « if, provided, while, when »²⁵ (cf. Pāli *tassa āgatakāle*, the well known example of a non-Indo-Aryan construction, which has been compared with Tamil *avaṇ vanta poḷutu*²⁶; but for *poḷutu* it seems more appropriate to say *kāl!*) and in the idiomatic compound with numeral one, *oru-(k-)kāl* « once, sometimes, perhaps »²⁷. The word *kālam* is attested from the Old Tamil text *Cilappatikāram* (16, 167 and 184).

I place much importance on the fact that out of the eight Dravidian languages from which the word *kāl/kālam* « time » is known, five at least use it also in the specific meaning « season ». Compare further the following Tamil expressions²⁸:

- kāla-k-kuṛi* « seasonal indications, signs of weather »;
kālattāl adv. « seasonably, in proper time » (*Kuṛaḷ* 686);
kālam « wet-season, crop, opposite to *kōṭai* » (local usage);
kāla-p-payir « lit., seasonal crop, wet-season crop, opp. to *kōṭai-p-payir* »;
kāla-pōkam « crop of grain, fruit, etc., proper to a season »;
kālam-pār « to look out for a suitable time, watch for an opportunity » (*Kampa-Rāmāyaṇa*);
kālam-peṛa adv. « at the right time; early in the morning »;
kāla-mayakku « (gramm.) deviation in the use of tenses sanctioned by usage; (akap.) theme of a confidante convincing the heroine that the winter season when her lord should return has not arrived, though it is actually otherwise »;
kālam-allā-k-kālam « unseasonable, improper time »;
kāla-maḷai « seasonal rain »;
kāla-v-āku-peyar « (gramm.) noun literally signifying time or season used figuratively to denote anything connected therewith, as the month *kārttikai* for a plant which blossoms in that month ».

The meaning « season » figures fairly prominently also in Indo-Aryan. In the Neo-Indo-Aryan languages, meanings of *kāl(a)* which have a large distribution are « time, year, season, famine, death », and of these the meaning « season » is recorded for Kasmiri, Nepali, Assamese and Bengali²⁹. In the following I quote all the meanings of Sanskrit *kālāh* « time » given by Monier-Williams's *Sanskrit-English Dictionary* (2 ed., Oxford, 1899), leaving out only some constructions, examples and references:

25. *TL* s.v. *kāl*^F: 2, citing Nālaṭiyār 123; cf. also COLLINS, quoted above, n. 4.

26. KUIPER, 1967 (n. 10), p. 83.

27. Several Tamilians known to me consistently make the mistake of saying « sometimes » (= *orukāl*) in English when they mean « perhaps ».

28. Cited from the *TL*.

29. Cf. R. L. TURNER, *A Comparative Dictionary of the Indo-Aryan Languages*, London, 1966, no. 3084.

- « a fixed or right point of time, a space of time, time (in general),
 AV. xix, 53 & 54; *SBr.* & c.;
- the proper time or season for (...) *SBr.*; *MBh.* & c.;
- occasion, circumstance, *MBh.* xii, 2950; *Mṛccḥ.*;
- season, *R.* & c.;
- meal time;
- hour;
- a period of time, time of the world (= *yuga*), *Rājāt.*;
- measure of time, prosody, *Prāt.*, *Pāṇ.*;
- a section, part, *VPrāt.*;
- the end, *ChUp.*;
- death by age, *Suśr.*;
- time (as leading to events, the causes of which are imperceptible
 to mind of man), destiny, fate, *MBh.*; *R.*, & c.;
- time (as destroying all things), death, time of death (often perso-
 nified and represented with the attributes of Yama, regent of
 the dead, or even identified with him) ».

Compare further the following compounds and derivatives:

- kāla-jñā-* adj. « knowing the fixed times or seasons », *Mn.* vii, 217;
Ragh. xii, 33;
- kāla-jñāna-* n. « knowledge of the fixed times or seasons », *Jyot.*; *VP.*;
- kāla-dharma-* m. « the law or operation of time, death, dying, *MBh.*;
Hariv.; *R.*; line of conduct suitable to any time or season;
 influence of time, seasonableness; effects suited to the time or
 season »;
- kāla-prabhāta-* n. « the dawning of the best season, i.e. the two
 months following the rainy season, autumn », *L.*;
- kāla-vidvas-* « knowing the season, a maker of calendars », *Var. BrS.*;
- kāle-ja-* « born or produced in due season », *Pāṇ.* vi, 3,15;
- kālotpādita-* « produced in due season »;
- kālopta-* « sown in due season », *Mn.* ix, 39;
- kālika-* « relating to or connected with or depending on time »,
Bhāṣāp.; « fit for any particular season, seasonable », *MBh.* iii,
 868; lasting a long time, *Pāṇ.* v, 1,108;
- kālya-* « timely, seasonable », *Pāṇ.* v, 1,107; « being in a particular
 period », *Gaṇap.*; n. « day-break », acc. loc. ind. « at day-break »,
R.; *Suśr.*

As already pointed out in the beginning, there is only one single
 Ṛgvedic occurrence, in the late 10th book, a fact that strongly suggests
 that this word *kālā-* has intruded into the language of the Ṛgvedic
 poetry only after its introduction into India. The context in the first

half of the verse 10,42,9 which with slight variants recurs in the *Atharvaveda* (7,50,6), is the dice-playing: *utā prahām atidīvyā jayāti kṛtām yāc chvaghñī vicinōti kālē* (AS *utā prahām atidīvā jayati kṛtām iva śvaghñī vicinōti kālē*). Even if there are differences of opinion regarding the detailed interpretation of this verse, largely conditioned by the difficulties encountered in understanding the Vedic game of dice³⁰, the meaning of *kālē* seems to be here either « in time » or « at proper time », or « when it is his (the gambler's) turn ». In the *Atharvaveda-Saṃhitā*, the word *kālā*- is found in addition to the variant of this verse otherwise in two hymns only. One is the famous *Kālasūkta*, AS 19,53-54, which praises Time as the highest divinity; the word is attested here 41 times. The other is AS 13,2,39, in which the sun as the ruddy one (*rōhita*-) is said to have become Time (*kālā*-) and Prajāpati in the beginning, etc. In the *Brāhmaṇa* texts, *kālā*- becomes a commonly used word, as it still is in the Indo-Āryan languages. Böhtling and Roth in their *Sanskrit-Wörterbuch*³¹ point out that the older term which *kālā*- thereby replaces is *ṛtu* « season, proper time ».

The meaning « season », which is well attested, could well have been the primary one, developing first to denote any « particular (period of) time » or « proper time », and then « time » in general³². The specialized meaning « season », moreover, makes it possible to trace the word further back to *Dravidian kāl* « leg > quarter », for its original meaning seems to have been « quarter of the year ».

It is true that the Vedic texts divide the year into three, five, six or seven, but not four seasons. Particularly the division into three seasons is well in agreement with the actual climatic conditions in India (hot season, rainy season, and cool season), and it is also reflected in the Vedic ritual in the *cāturmāsya* sacrifices performed at four months intervals. The most common division into six seasons, again, is apparently only a later development which integrates in itself also the division of the year into 12 months³³.

Even though the Vedic year did not consist of exactly four seasons, the length of one season, be it 1/3 or 1/5 or 1/6 of the year, very nearly agrees with that of 1/4 of the year. A semantic shift from « quarter of the year » into « season », therefore, does not seem at all unreasonable to me, provided, of course, that the concept of a « quarter of the year » is otherwise justified. And it is, for the year is quite naturally divided into four equal parts (quarters) by the turning points of the sun, the

30. Cf. the works listed in J. C. HEESTERMAN, *The Ancient Indian Royal Consecration*, s-Gravenhage, 1957 (Disputationes Rheno-Trajectinae, 2) p. 143 n. 16.

31. 2. Theil, St. Petersburg, 1858, col. 248, l. 27.

32. Cf. especially the compounds cited above from Tamil. Prof. Hermann Berger has kindly drawn my attention to the fact that i.a. in the Burušaski language words originally denoting a particular limited time are used in the general sense of 'time'.

33. Cf. e.g. MACDONELL and KEITH, 1912 (n. 18), I, p. 110 f., and G. THIBAUT, 1899 (Grundriss der Indo-Arischen Philologie und Altertumskunde III: 9), pp. 10 f.

solstices and equinoxes. Even peoples at a relatively low cultural level, but especially sedentary peoples, have observed that at the time of the equinoxe the sun rises from due east, while during one half of the year it rises more and more towards the north from due east, returning backwards again after the solstice, while during the other half of the year it similarly rises south of due east³⁴. We have a direct statement in the late *R̥gveda* according to which 360 days of the turning wheel of the year were in fact divided into four quarters of 90 days each: RS 1,155,6 ab *catúrbbhiḥ sākāṃ navatīṃ ca nāmabhiś cakrāṃ nā vrttām vyātīṃr avīvipat* « with four times ninety names has he made the pairs (?) to move like a rolling wheel »: thus according to Geldner, who comments: « Die 360 Tage, bez. Tage und Nächte, wenn der Sinn von *vyātī* richtig vermutet ist. Jeder Tag hat seinen "Namen" (1,123,4)... »³⁵. The round year of 360 days (12 months of 30 days each) is very frequently referred to in the Vedic texts, starting with the late books of the *R̥gveda*, cf. particularly RS 1,164,11-15 and 48³⁶. The last mentioned hymn also speaks in connection with the year of « 720 sons in pairs » (verse 11), which clearly refers to 360 days and 360 nights³⁷. These passages show that the quarter of the year played some role in the reckonings of the ancient Indian calendar. On the other hand, passages such as *Kauṣītaki-Brah̥mana* 19,3 quoted below in A.B. Keith's translation³⁸ prove for certain that the turning points of the sun were observed in Vedic times, and that they played an important role in the sacrificial calendar:

« ... He (the sun) goes north for six months; him they follow with six-day periods in forward arrangement. Having gone north for six months he stands still, being about to turn southwards; these also rest, being about to sacrifice with the Viṣvanta day; ... He goes south for six months; him they follow with six-day periods in reverse order. Having gone south for six months he stands still, being about to turn north; these also rest, being about to sacrifice with the Mahāvraata day... ».

In this connection it is appropriate to point out that the four turning points of the sun were apparently related to the four cardinal directions. According to the *Satapatha-Brah̥mana* (14,3,1,17), the sun is

34. Cf. F. K. GINZEL, *Handbuch der mathematischen und technischen Chronologie*, I, Leipzig, 1906, p. 67. For the observation of the solstices and equinoxes among various peoples cf. MARTIN P. NILSSON, *Primitive time-reckoning*, Lund, 1920, pl 311 ff.

35. K. F. GELDNER, *Der Rig-Veda aus dem Sanskrit übersetzt*, I, Cambridge, Mass., 1951 (Harvard Oriental Series 33), p. 214.

36. Cf. ALBRECHT WEBER, *Die vedischen Nachrichten von den naxatra (Mondstationen)*, Zweiter Theil, in « Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin », Aus dem Jahre 1861, Berlin 1862, p. 288, n.

37. Cf. e.g. GELDNER (n. 35) a.l.

38. A. B. KEITH, *Rigveda Brahmanas*, Cambridge, Mass., 1920 (Harvard Oriental Series 25), p. 452.

quadrangular (*catuḥśrakti*), the four directions being specified as his corners. While the connection of the solstices with north and south is clear from the above quotations, *Satapatha-Brahmana* 2,1,2,3 seems to connect the vernal equinox in particular with the east. It is said here of the *kr̥ttikās*, the stars of the Pleiades, that « they do not move away from the eastern quarter, whilst the other asterisms do move from the eastern quarter » (Eggeling's transl.). Compare also *Kāthaka* 8,1, where the *kr̥ttikās* are said to have made the eastern direction agreeable to Agni, while before that the directions had not been fixed nor recognized: *diśo vai nākalpanta na prājñāyanta, tata etām agnaye prācīm diśam arocayan yat kr̥ttikāḥ*. As noted above, the sun rises due east at the time of the vernal equinox, which e.g. in Mesopotamia since about 2000 BC has marked the starting point of the yearly calendar³⁹. The sun is also daily « born » in the east. In the present instance, we are particularly interested in the sun's yearly « birth », which undoubtedly lies behind the myth of Skanda's birth, and its connection with the *kr̥ttikās*. The newly born Skanda, also called Kārttikeya because he was nursed/born by the *kr̥ttikās*, is directly compared with the rising sun shining in the red clouds (*Mahābhārata* 3,224,14318 *lohitābbhre sumahati bhāti sūrya ivoditaḥ*). The asterism of the Pleiades occupies the first place in the oldest list of lunar mansions in the *Atharvaveda* and other Vedic texts, which indicates that it marked originally the beginning of the year. The sun, i.e. Agni « fire » who figures also in the myth of Skanda's birth, was in the asterism of the Pleiades (which « are doubtless Agni's asterism », *SB* 2,1,2,1) at the vernal equinox in 2260 BC. Moreover, the stars of the Indian and the related Chinese lunar zodiac agree more closely with the celestial equator of the 24th century BC than with that of any later time. These and other reasons suggest that the *nakṣatra* calendar was compiled around 2400 BC⁴¹. This date and the need for a solar calendar imposed by the urbanization process (which is absent in China at this time) in their turn imply that the creators of this calendar most probably were the Indus people⁴².

There is also some linguistic evidence pointing to a North-Dravidian origin of the *nakṣatra* calendar. The word *bhekuri*, *bekuri* or *vekuri* is said to be the name of the asterisms at the damsels of the moon in *Vājasaneyi-Saṃhitā* 18,40, *Taittirīya-Saṃhitā* 3,4,7,1, and *Kāthaka* 18,14,

39. Cf. A. JEREMIAS, *Handbuch der altorientalischen Geisteskultur*, 2 Aufl., Berlin und Leipzig, 1929, p. 186; GINZEL, 1906 (n. 34), I p. 125.

40. Cf. e.g. WENDY DONIGER O'FLAHERTY, *Asceticism and Eroticism in the Mythology of Śiva*, London, 1973, pp. 94 ff.

41. Cf. JOSEPH NEEDHAM, *Science and Civilization in China*, Vol. III, Cambridge, 1959, pp. 246, 250.

42. Cf. A. PARPOLA, *Harappan Roots of Ancient Indian Astronomy and Cosmic Speculation*, to appear in the *Proceedings of the XXIXth International Congress of Orientalists* (cf. *Abstracts of Papers*, Paris, 1973, Sections 6-7, p. 76).

while *Pañcaviṃśa Brāhmaṇa* 1,3,1 provides the variant *bekurā*⁴³. A good etymology to this mythical and apparently very ancient name of the *nakṣatras*, which has long remained unexplained⁴⁴, seems to be supplied by the Dravidian root *vaiku* = North Dravidian **beku* « to stay, pass the night, to protract till dawn, to dawn » (*DED* 4570), from which Tamil *vaikurumīṇ* « morning star » (*Akam* 17), Gōṇḍī *viyā sukum* « morning star » and Kuī *vēgam-boḍuṇi* « morning star » are derived. In Tamil at least, the root also means « to cohabit » (*Cīvaka*. 586), a meaning suiting the myth of the *nakṣatras* as the moon's mistresses. Compare also the meanings of the root *uru* or *urai*, which according to the *Tamil Lexicon* makes the latter part of the word *vaikuru* « dawn »: « to be, exist, stay, dwell, abide, be close together, be joined, come in contact with, to have sexual intercourse with » (*DED* 608). This root fits excellently the « conjunctions » of the moon with the asterisms. The changes *b* < *v* and **ey* < **ay* which are reflected in the Sanskrit forms are characteristic to North Dravidian⁴⁵.

It is well known that similarly pronounced words with different meanings have often led archaic and primitive peoples to invent aetiological stories in order to explain the mystical identity of the concepts concerned. In the Finnish folk songs of Kalevala (50,1-350) describing Jesus' birth, virgin Mary (Marjatta) is told to have become pregnant from a berry which jumped into her mouth in the forest. This version, which is in striking contrast with the original story well known to us, finds a natural explanation in the similarity of Mary's name *Maria* and the Finnish word *marja* « berry ». The pictographic script based on the rebus principle may have given the Indus priests a special reason to cultivate such a « punning » mythology. In any case it seems quite probable to me that the quasi-etymological speculations of the *Brāhmaṇa*-texts may ultimately be descended from Indus traditions, which in a number of cases seem to have been preserved more prominently in the Epic and Puranic text⁴⁶. Thus the well known myth of Kṛṣṇa's *rasa-līlā*, the nocturnal circular dance which this « full » incarnation of

43. Cf. WEBER, 1862 (n. 36), p. 274.

44. Cf. MAYRHOFER, (n. 1) II, Heidelberg, 1963, pp. 448 f. for previous explanations: the present one has been briefly indicated i.a. in the papers cited in notes 11 and 42.

45. Cf. M. B. EMENEAU, *Brahui and Dravidian Comparative Grammar*, Berkeley and Los Angeles, 1962 (University of California Publications in Linguistics 27), pp. 62 (§ 5.2), 15 ff. (§ 2.19 & 21). The latter change is not restricted to North Dravidian.

46. The epic tradition goes back to the *vṛātya* people of the Vedic times (cf. PAUL HORSCH, *Die vedische gāthā- und śloka-Literatur*, Bern, 1966), who seem to be descendants of Aryans who came to India before those Aryans who brought there the Ṛgvedic poetry (cf. A. PARPOLA, *Arguments for an Aryan origin of the South Indian megaliths*, Madras, 1973).

Viṣṇu⁴⁷ performs with beautiful cowherdesses on the banks of the river Yamunā⁴⁸, may perpetuate an originally Harappan myth preversed in a simpler form in the above Vedic references to the full moon as the lover of the asterisms as heavenly damsels (*ap-saras*, literally « water-pond »), who bathe (cf. the myth of the *Kṛttikās* and that of Kṛṣṇa stealing the cloths of the bathing *gopīs*) in the heavenly river, Sarasvatī « full of ponds », which according to the *Pañcaviṅśa-Brāhmaṇa* is « Bekurā by name »⁴⁹.

One Hindu myth is of particular interest to us in this connection because it seems to support the above suggested etymology of the word *kālā* « time, season ». Manu, who in another place (8,16) mentions *Dharma* (righteousness) as an ox (*vr̥ṣa*), includes the following verses in his account of the creation:

1,81. In the *Kṛta* age *Dharma* is four-footed [*catuṣpād*] and entire, and (so is) truth; nor does any gain accrue to men by unrighteousness.

82. In the other (three ages), by reason of (unjust) gains (*āgama*), *Dharma* is deprived successively of one foot, and through (the prevalence of) theft, falsehood, and fraud merit (gained by men) is diminished by one fourth (in each) »⁵⁰.

It seems to me that we have here an old Dravidian aetiological myth which had been invented to account for the identity of the words *kāl* « quarter (of the cycle), season, age » and *kāl* « leg ». This linguistic association is not found in Sanskrit, into which the myth was translated when the language spoken in North India shifted, through a period of bilingualism, from Dravidian to Indo-Aryan. The first word was bor-

47. In a forthcoming book on the religion of the Indus civilization, I intend to present more arguments for considering the « full » incarnation (*pūrṇavatāra*) of Viṣṇu, Kṛṣṇa, as representing the full moon, or the dark half month (*kr̥ṣṇapakṣa*), while his elder brother, the white Balarāma, would represent the crescent moon and the light half-month (*śuklapakṣa*). Moreover, these two aspects of the moon seem to be represented by the green planet Mercury and the white planet Venus respectively. Of course, these deities are complex figures, and this astral explanation explains only part of their character.

48. Cf. *Viṣṇu-Purāṇa* 5,13 and H. H. Wilson's translation (3 ed., Calcutta, 1961), pp. 425 f.

49. *PB* 1,3,1.

50. Transl. G. Bühler, *The Laws of Manu*, Oxford, 1886, (Sacred Books of the East, 25), pp. 22 f. — With regard to the four feet of *Dharma* compare also the legal concept of the four-footed process (*Nārada*, *Introd.*, 1,10 *dharmaś ca vyavahāraś ca caritraṃ rājaśāsanam / catuṣpād vyavahāro 'yam uttaraḥ pūrvabādhakaḥ* /; also in Kauṭilya's *Arthaśāstra* 3,1,39, and elsewhere) which is discussed in detail by R. LINGAT, *Les quatre pieds du procès*, in « *Journal Asiatique* », 250, 1962, pp. 489-503. Compare also *Gopatha-Brāhmaṇa* 2,2,5, where the sacrifice is based on the *four Vedas* (i.e., including the semi-orthodox *Atharvaveda*) is said to be « four-footed (and hence) complete » (*catuṣpāt sakalo yajñas...*). This statement is found in a *śloka* (cf. HORSCH, 1966 [n. 46], p. 148) and is thus related to the *vr̥tya* traditions (cf. n. 46).

rowed into Sanskrit as *kālā*- « time, season », but not the basic word for « leg, foot », for which there was such a well known counterpart in *pad*- etc. For this reason the original « meaning » of the myth was forgotten, as happened in the case of the biblical myth of Eve's creation from Adam's rib, based on a Sumerian « pun » that could not be preserved when the myth was translated into Hebrew, an entirely different language⁵¹. Many other « odd » myths of the Indian religions can probably be explained in this way.

The myth of the four ages is, however, known from relatively recent sources only, and therefore it is necessary to demonstrate that it can really go back to pre-Vedic times. Within the limits of this paper, however, certain topics can be only cursorily touched. The same myth is told also for example in the account of the four world ages by Hanūmān in the 149th chapter of the *Vanaparvan* in the *Mahābhārata* (3,11234 ff.), where each age is, moreover, correlated with a particular colour assumed by Viṣṇu: he is white in the *ṛtayuga*, red in the *trētāyuga*, greenish-yellow in the *dvāparayuga*, and black in the *kaliyuga*. These same colours are elsewhere associated with the four social classes, the *brāhmaṇas*, *ksatriyas*, *vaiśyas* and *śūdras*⁵². Out of these, the first three classes are correlated in the *Veda* with the spring, the summer, and rainy season respectively⁵³. I shall not go here further into the matter of this classificatory system, which comprised also the directions of space (with their guardian deities)⁵⁴ which in the classical Hindu cosmology had the same symbolic colours⁵⁵. In a previous paper I have already put forward the suggestion that the *cross* of the four directions formed a conceptual frame for the ancient Indian cosmic speculation, and that a sort of primitive Sāṃkhya philosophy involving the theory of elements was created by the Harappans operating with systematic correlations of this kind⁵⁶. Here I would only like to draw attention to the parallelism between the fourfold division of the *mahāyuga* with its colours and the fourfold solar cycle. The four *sandhyās*, morning, noon, evening and midnight play an integral part in the Hindu ritual⁵⁷. This diurnal cycle has a parallel in the four « quarters » of the year. The symbolic colours seem to be derived from both of these two solar cycles: thus *red* is the colour of *fire*, ie. hot noon and summer, *green* is the colour of *water* and the rainy season (producing greenness), and *black* the colour of the darkness of the *midnight* corresponding to winter, while

51. Cf. S. N. KRAMER, *The Sumerians*, Chicago, 1963, p. 149.

52. Cf. A. WEBER, *Collectanea über die Kastenverhältnisse in den Brāhmaṇa und Sūtra*, Indische Studien 10, 1868, pp. 10-24.

53. Cf. *ibid.*, p. 20.

54. Cf. W. KIRFEL, *Die Kosmographie der Inder*, Bonn und Leipzig, 1920, pp. 7 f., 10.

55. Cf. *ibid.*, p. 93 (the four sides of Mt. Meru).

56. Cf. the paper cited in n. 42. I shall try to substantiate this hypothesis in a more comprehensive work in preparation (cf. n. 47).

57. Cf. e.g. C. G. DIEHL, *Instrument and purpose*, Lund, 1956 (thesis), p. 80.

white is left to the light of morning, the counterpart of spring which starts the yearly cycle.

There is no certain reference to the four *yugas* in the sense of « world ages » in the older Vedic literature; a doubtful one is *Atharvaveda-Saṃhitā* 8,2,21 ab *śatāṃ te 'yūtaṃ hāyanān dvé yugé trīṇi catvāri kṛṇmaḥ* « A hundred, a myriad years, two periods (*yugá*), three, four, we make for thee »⁵⁸. According to the *Purānas*, the total length of the great cycle of the four *yugas* (which are not of equal length but have the ratio 4:3:2:1) is 4.320.000 years or 12.000 divine years (*divyavarṣa*)⁵⁹. Also these figures support the hypothesis that the great cycle was originally the year, which according to the *Satapatha-Brāhmaṇa* (10.4.2.2 ff.) has 432.000 moments (*muhūrta*), and consists of 12 months. The world ages of the classical texts would, then, have developed out of the four quarters of the year, « seasons », defined by the solstitial and equinoctial points.

Although the four ages as such do not figure in the early Vedic texts, their names do occur there, but as those of the four throws of dice, *kṛta* being the best and *kali* the worst⁶⁰. Many dice have been found in the excavations of the Harappan sites⁶¹. My intention is to discuss in another paper in detail their relation to the later Indian game of dice, but the connection with four *yugas* makes it necessary to go briefly into this matter here also. The oblong type of Harappan dice with only four (!) marked sides has survived to the present day in India and the Indianized parts of Asia, while it seems to be unknown elsewhere in the world; in Indo-Aryan it is called *pāsa(ka)* in Pāli and *pāśa(ka)* in (classical) Sanskrit⁶². Heinrich Lüders⁶³ has suggested that the much later attested *prāsaka* (Hemacandra & Bower-Ms.) preserves a trace of the etymology, the root *pra-as-*, which Karl Hoffmann has shown to have the meaning of « laying a wager » (*aṃśam pra-as-* in *PB* 14,3,13 and *aṃśa-prāsá-* in *MS* 1,6,12)⁶⁴; this explanation is accepted by

58. The translation is W. D. WHITNEY'S (*Atharva-Veda-Saṃhitā translated into English*, edited by Ch. R. Lanman, Cambridge, Mass., 1905, Harvard Oriental Series 7-8), who comments: « The 'periods' here are not at all likely to be those of the later chronology, though the commentator naturally thinks them so ».

59. Cf. KIRFEL, 1920 (n. 54), p. 334.

60. Cf. the literature cited in n. 30 especially H. LÜDERS, *Das Würfelspiel im alten Indien*, Berlin, 1907 (Abhandlungen des Königlichen Gesellschaft der Wissenschaften zu Göttingen, Phil.-hist. Kl., NF 9:2).

61. Cf. GEORGE F. DALES, *Of Dice and Men*, in *JAOS*, 88, 1968, pp. 14-23; Dales's study is limited to the cubical dice of the Indus civilization. For examples of the Harappan oblong dice cf. particularly E. MACKAY, *Further Excavations at Mohenjodaro*, Delhi, 1938, II pl. CXXXVIII: 41, 43, 48 and pl. CXLIII: 41, 43, 47, 51.

62. Cf. LÜDERS, 1907 (n. 60), p. 16 f. and W. NORMAN BROWN, *The Indian Games of Pachisi, Chaupar and Chausar*, in *Studies in Indian Linguistics* (Prof. M. B. Emeneau *Ṣaṣṭipūrṭi* Volume), ed. Bh. Krishnamurti, Poona and Annamalainagar, 1968, pp. 46-53, pp. 50 f.

63. LÜDERS, 1907 (n. 60), p. 16.

64. K. HOFFMANN, *Mārtāṇḍa und Gayōmart*, in « Münchener Studien zur Sprachwissenschaft » 11, 1957, pp. 85-103, pp. 88 f. and n. 12.

Mayrhofer, too⁶⁵. Rather than taking *pāsa(ka)* and *pāśa(ka)* as Prakrit forms (the latter hypersanscritized) of *prāsa(ka)*, I would like to derive these words from the Dravidian root *pāy* « to spring, to leap, to jump over », from which we have in Tamiḷ the derivatives *pāyccu* and *pāyttu* « spring, leap, throw (as of dice) » (*DED* 3362). From the *Vidhurapaṇḍi-tajātaka*⁶⁶ and *Atharvaveda* 4,38⁶⁷ we know that these oblong dice were thrown up into the air here they were « dancing » with the *apsarases*. In the Vedic ritual there are two occasions for a ceremonial game of dice, one at the establishment of the sacred fires (*agnyādheya*)⁶⁸ and another at the royal consecration (*rājasūya*)⁶⁹. It is interesting to observe that in both cases there are four players — according to *Maitrāyaṇī Saṃhitā* 4,4,6 a *brāhmaṇa*, a *rājanya*, a *vaiśya*, and a *sūdra* —, and that they play for (the parts of) a four-year old cow. Held⁷⁰ has already related the game of dice with a system of classification of the kind discussed above. The stake, a cow, reminds us of the divisions of the cow in the bargaining of the *soma*. In the later dice game the two playing parts had to submit before the game 5 stakes each, and a *kali* throw gave 1, a *dvāpara* 3, a *treṭā* 6, and a *kṛtā* 10 stakes⁷¹. The sum of the different throws is also 10 (4+3+2+1), as is the number of Viṣṇu's *avatāras* in the various *yugas* in the Puranic mythology⁷². It remains to note that since there are four players, the word *kālā-* « time » in its first, Ṛgvedic, occurrence might well have been « turn », from the basic sense of « quarter of the round or cycle ».

65. MAYRHOFER (n. 1 & 44), II, p. 265.

66. Cf. LÜDERS, 1907 (n. 60), p. 6.

67. Cf. *ibid.*, p. 8.

68. W. CALAND, *Über das rituelle Sūtra des Baudhāyana*, Leipzig, 1903 (Abhandlungen für die Kunde des Morgenlandes 12:1), p. 17; G. J. HELD, *The Mahābhārata*, Amsterdam, 1935 (thesis Leiden), pp. 266 ff.

69. Cf. HEESTERMAN, 1957 (n. 30), pp. 143 ff. and also *SB* 5,4,4,6 ff.

70. Cf. HELD, 1935 (n. 68), pp. 248 f., 253, 265 ff.

71. Cf. LÜDERS, 1907 (n. 60), p. 61.

72. Cf. also the *Paripāṭal* passage cited above, p. 365.