



Electronic Journal of Vedic Studies

Volume 4 (1998), Issue 2

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ISSN 1084-7561

<http://dx.doi.org/10.11588/ejvs.1998.2.827>

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1 Introduction

<pūrṇaḥ kumbhaḥ ityasya mantrasya bhṛgu ṛṣiḥ sarvātmakaḥ kālo devatā triṣṭup
chandaḥ hariḥ oṃ>

pūrṇaḥ kumbho dhikāla āhitas taṃ vai paśyāmo bahudhā nu santam
<oṃ tatsat>

This *mantra* is the third *ṛk* of the *sūkta* (XIX. 53) in Atharvaveda. This *sūkta* and the next *sūkta* (XIX. 54) constitute the well known Kālasūkta-s which are theosophic and cosmogonic in character and have been studied by many scholars¹⁻⁶. The *mantra* itself has been characterized as an enigmatic *mantra* “of incomparable beauty and suggestive force”⁵ in the Kālasūkta-s. Given below are the translations of various scholars, which are all based on the commonly accepted *padavibhāga*:

/ pūrṇaḥ / kumbhaḥ / adhi / kāle / āhitaḥ /
/ taṃ / vai / paśyāmaḥ / bahudhā / nu / santam /

1. A full jar has been placed upon time.
Him, verily we see existing in many forms.(Bloomfield¹)
2. The whole of this universe is stationed in the Omnipresent God.
We, the good ones on the earth see him in various ways.(Devichand²)
3. On time is laid an overflowing beaker.
This we behold in many a place appearing.(Griffith³)
4. A full jar has been placed upon time.
We behold him existing in many forms.(Muir⁴)
5. Above Time is set a brimful vessel.
Simultaneously we see Time here, there, everywhere.(Panikkar⁵)
6. A full vessel is set upon time.
We indeed see it, being now manifoldly.(Whitney⁶)

¹Bloomfield, Maurice, *Hymns of the Atharvaveda*, Greenwood publishers(New York,1969) p. 224.

²Devichand, *The Atharvaveda*, Munshiram Manoharlal publishers (New Delhi, 1994) p. 782.

³Griffith, Ralph, T. H., *The Hymns of Atharvaveda*, Chowkamba Sanskrit Series (Varanasi,1968) p. 310.

⁴Muir, J., *Original Sanskrit Texts*, Trubner & Co. (London, 1870) p. 408.

⁵Panikkar, R. *The Vedic Experience: Manimanjari*, University of California Press (Berkeley, 1977) p. 217.

⁶Whitney, W. D., *Atharvaveda Saṃhitā*, Harvard University (Cambridge, 1905) p. 988.

It is obvious that the translations given by all these scholars, except Devichand⁷, are basically literal and that the “full vessel” in the first part of the *mantra* is enigmatic. Several explanations, none of which is fully satisfactory, have been given. For example, Bloomfield¹ quotes Ludwig as explaining the “full jar” as the sun. Griffith³ explains “the beaker” as the “sun imagined as a golden urn overflowing with light.” Panikkar⁵ says that the vessel set upon Time is so full that however much is drawn from it, it never empties. A more satisfying explanation is considered to have been given by Sāyaṇa, according to whom, “pūrṇaḥ” means “sarvatra vyāptaḥ,” pervading everywhere; and “kumbhaḥ” is explained by “kumbhavat kumbho ahorātra-māsa-rtu-saṃvatsarādi-rūpo-vacchinno janyaḥ kālaḥ.” Sāyaṇa sees in *kumbha*, divisible, and hence measurable, time in the form of day, night, month, seasons, and year etc., in contrast to *kāla*, the eternal/indivisible time. Another plausible explanation derives from the work of Witzel⁸ on the circumpolar motion of the Big Dipper, especially when the next line in the *sūkta* is also considered:

“sa imā viśvā bhuvanāni pratyaṅ kālāṃ tam āhuḥ parame vyoman”
 ‘It faces all beings here (on earth); they call it “time” in the highest firmament’.

The “kumbha” could then refer to the vessel of the Big Dipper in the highest sky (*parame vyoman*). “pūrṇaḥ kumbhaḥ” would refer to the vessel considered full when it is up-turned, (empty when it is down-turned at other times), and the ‘many forms’ could refer to the various positions the vessel takes in the sky each night/year⁹. It is suggested in this note that, in fact, a literal translation of this enigmatic *mantra* could lead to a plausible reference to measurement of time using an out-flowing water clock.

2 Time and the Vedic ritual yajña

The ritual yajña is central to the Vedas. It is imperative that the rituals be performed on time and according to “vidhi”, or else.

tad etat satyaṃ mantreṣu karmāṇi kavayo yāny apaśyāṃs tāni tretāyāṃ bahudhā
 santatāni tāny ācarata nityaṃ (MU I. 2.1)

“This is the truth. The rituals, which the sages saw in the hymns, are variously spread forth in the three Vedas. Perform them constantly.”

⁷Moreover, Devichand uses the unemended text (which is also used by Satavalekar and S. P. Pandit): *nu santaḥ* in the *mantra*.

⁸Witzel, Michael, “Looking for the Heavenly Casket”, EJVS 1-2 (1995).

⁹I am grateful to Professor Witzel for pointing out this explanation. However, because of the circumpolar nature of the motion, the Big Dipper is up-turned (full vessel) at the lowest part of the sky and down-turned (empty) when it is highest in the sky. Furthermore, the latitude of the place determines if the entire Big Dipper is circumpolar. At the current epoch 2000 AD, at the latitude corresponding to New Delhi (28 degree N), except alpha-Ursa Major, none of the other members of the Big Dipper are circumpolar; therefore, it is never seen as a “full vessel”. It is seen fully down-turned at the highest position in the sky around midnight on March 15. From December through May it is seen in the fully down-turned position some time at night. However, around 1200 BC, at the latitude of Delhi, the entire Big Dipper was circumpolar, and could be seen as “full” around midnight in July; it would have been “full” at some time during the night from about May through October. The rest of the year it would only have been seen as emptying.

yasyāgnihotraṃ adārśaṃ apaurnaṃ māsāṃ acāturmāsyaṃ anāgrayaṇaṃ atithivarjitañca
 ahutaṃ avaiśvadevaṃ avidhināhutaṃ āsaptamāṃs tasya lokān hinasti (MU I. 2.3)
 “He, whose *agnihotra* sacrifice is not [followed by] the sacrifices of the new moon, and
 the full moon, by the *cāturmāsya* sacrifice, by the ritual *āgrayaṇa* [performed in the
 harvest season], who is without guests, is without oblations, [and] is without ceremony
 to all the gods, or who gives offerings contrary to the rule, [because of such conduct],
 destroys his worlds till the seventh.”

With such strong injunction, the Vedic people had to know time in order to perform *yajña* properly. It is obvious that they knew the various divisions of time, such as *saṃvatsara* (RV I. 110.4), *māsa* (RV I. 25.8), *ṛtu* (RV I. 49.3), and *muhūrta* (RV III. 33.5; TB III. 10.1.1); shorter intervals of time such as *kṣipra*, *etarhi*, *idāni* etc., were also familiar (ŚB 12.3.2.5)¹⁰. By the time of VJ, the time units appear to have already been standardized¹¹:

kalā muhūrtāḥ kāṣṭhās ca ahorātrās ca sarvaśaḥ
 ardhamāsā masā ṛtavas saṃvatsarāś ca kalpantāṃ (MNU I. 2.3–4)

VJ describes the use of water clocks and VJ itself is known as “*kālavidhāna śāstra*”. In earlier times, they could easily keep track of longer time segments like *ahorātra*, *māsa*, and *saṃvatsara* by astronomical observations. But, how did they keep track of smaller units of time such as *kāṣṭhā*, *kṣipra*, or *muhūrta*?

3 A simple translation of AV (XIX.53.3) and measurement of time

It is generally taken as a rule that a student of the Veda should interpret and explain the Vedic texts just as they have been handed down, and should not venture emendations of these holy texts. In some cases, however, a conjecture, perhaps in the form of a *sandhi* or a *padavibhāga* may be justified, if it clarifies an issue or provides a better meaning, provided the *mantra* itself is not altered. It is suggested that the *mantra* under discussion can be understood better by an alternate word division (*padavibhāga*) of the first part of the *mantra*. The new *padavibhāga* is only slightly

¹⁰The relationships among these time units are given in ŚB 12.3.2.5:

1	<i>muhūrta</i>	=	15	<i>kṣipra</i>
1	<i>kṣipra</i>	=	15	<i>etarhi</i>
1	<i>etarhi</i>	=	15	<i>idāni</i>
1	<i>idāni</i>	=	15	breathings
1	breathing	=	1	spiration = 1 twinkling (<i>nimeṣa</i>).

¹¹The relationships among these time units can be found in VJ.

124	<i>kāṣṭhās</i>	=	1	<i>kalā</i>
20 and 1/10	<i>kalās</i>	=	1	<i>muhūrta</i>
30	<i>muhūrtas</i>	=	1	<i>ahorātra</i> (day and night)
2	<i>parvans</i>	=	1	<i>cāndramāsa</i>
2	months	=	1	<i>ṛtu</i>
2	<i>ayanas</i>	=	1	year

different from the one given earlier, and is obtained by regarding the words *adhi* and *kālah* as forming a single compound word *adhikālaṃ* (*avyayābhāva samāsa*). Compound words with *adhi-*, such as *adhidevatā*, *adhijajña*, etc., are found quite commonly in Brāhmaṇa and Upaniṣad texts. The *mantra* would then read:

/ pūrṇaḥ kumbho dhikālaṃ āhitastaṃ vai paśyāmo bahudhā nu santaṃ /

It may be noted that in so doing the *mantra* itself is not altered in any substantial way, only an extra *anusvāra*, a *bindumātraṃ* (as indeed found in several Indian editions), is added. The intuitive support for the idea of using the word *adhikālaṃ* is derived from the connection between *yajña* and *kāla*. It is well known from Brāhmaṇa and Upaniṣad texts that there is equivalence between *yajña* and Prajāpati on the one hand (for example, *yajñah prajāpatiḥ iti*, BU.3.9.6), and between Prajāpati and *saṃvatsara* on the other (*saṃvatsaro vai prajāpatiḥ*, PU.1.9). Therefore, there is equivalence between *saṃvatsara*, which is *kāla*, and *yajña* (*saṃvatsaro yajñah prajāpatiḥ*, ŚB.1.1.1.13). As the word *adhijajñaṃ* is quite commonly used in Upaniṣads, it gives credence to the word *adhikālaṃ*. The use of the compound word *adhikālaṃ* has shifted the emphasis from *adhi* to *adhikālaṃ*. When the compound word is used, *adhikālaṃ āhitaḥ* means simply *kāle āhitaḥ*. Here, *kāle* means *kālaviṣaye*, i.e., with reference to time. Thus, the word *adhikālaṃ* can be discussed in the same way as those denoting the following entities:

adhilokaṃ adhiyotiṣaṃ adhividyam adhiprajam adhyātmanam

referred to in Taittirīya Upaniṣad. In the latter context, the meaning of *adhi* is also “with reference to” or “concerning”, just as discussed above. The *mantra* can then be taken to read:

“A full vessel is set with reference to time.”

Sāyaṇa has already alluded to *kumbha* as representing measurable time. Taking a hint from Sāyaṇa, it is suggested that the translation of the *mantra* be given as:

“ A full vessel is set [up] with reference to [measurement of] time.”

This is just a literal translation. The word *kumbha* is generally taken to refer to a spherical vessel. However, it can refer to vessels of other shapes also as can be verified from Monier William’s dictionary (p.293). In fact, Bloomfield translates it as a jar, which is cylindrical. A cylindrical vessel, which is full when set up with reference to measurement of time would imply an out-flowing water clock¹², a *ghaṭika*, such as the type referred to in VJ. Thus the *mantra* appears to refer to an out-flowing water clock.

¹²Fleet, J. F., “The ancient Indian water clock”, *Journal of the Royal Asiatic Society*, 213–230, (1915). There are generally two types of water clock used in ancient India.

(I) Outflow type: This is a cylinder with known dimensions with a small hole (of a specified size) near the bottom from which the water flows out. Initially, the cylinder is filled with water. The time required for the water to flow out completely is one *nādika* (2 *nādika-s* = 1 *muhūrta*).

(II) Floating Bowl type: This is a hemispherical bowl, which has a hole at its bottom from which water flows in. It sinks after a definite interval of time, usually also one *nādika*.

4 Additional comments

Support for this simple idea is obtained from the very next part of the *mantra*:

taṃ vai paśyāmo bahudhā nu santam
 “We indeed see it existing in many forms”

perhaps referring to water clocks of different forms! There is no need to twist and stretch the text to be interpreted in the way we read into it. It may be noted that according to Madhvācārya, the founder of the Dvaita school of Vedānta, Vedas can be understood at three different levels (*trayārtham śrutisu*). The literal meaning given above is at the lowest level referring to the physical element *kāla* and is not in conflict with the traditionally accepted meaning given by Sāyaṇa, which is at a higher level. Furthermore, the interpretation given here adds another dimension to the meaning of the *mantra*, the practical, of measurement of time. In a different context, *adhi* would mean supreme. Then *adhikālam* would refer to the Cosmic Time. It would then appear as if the *mantra* is using the language of a physicist, with *pūrṇaḥ kumbhaḥ* referring to a local origin of time. It is as if the *mantra* is saying

“Set $t = 0$ when the vessel is full; the range of Time is from $-$ infinity to $+$ infinity.”

5 Conclusion

An alternate *padavibhāga* of the *mantra* AV (XIX. 53.3)

/ pūrṇaḥ / kumbhaḥ / adhikāla / āhitaḥ /
 / taṃ / vai / paśyāmaḥ / bahudhā / nu / santam. /

leads to a simple literal translation:

“A full vessel is set [up] with reference to [measurement of] time. We indeed see it existing in many different forms.”

This implies the use of an out-flowing water clock for measurement of time and perhaps, the existence of different types of water clock. This interpretation clarifies the enigma that has puzzled scholars for a century. It is not in conflict with the traditionally accepted interpretation of Sāyaṇa, but adds to it a utilitarian aspect not considered so far.

List of Abbreviations

AV Atharvaveda

BU Bṛhadāraṇyaka-Upaniṣad

MU Muṇḍaka-Upaniṣad

MNU Mahānārāyaṇa-Upaniṣad

PU Praśna-Upaniṣad

RV R̥gveda

VJ Vedāṅga-Jyotiṣa

ŚB Śatapatha-Brāhmaṇa