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THE EPOCH OF THE KĀLACAKRA TANTRA

One of the most vexing problems in our attempts to reconstruct the history of Indian Buddhism is the extreme paucity of absolute dates. If the bedrock of historiography is chronology, much of our understanding of Indian Buddhist history lies on foundations that are very shaky indeed. One need only review the scholarly efforts that thus far have failed to establish complete consensus on the dates of such figures as the Buddha and Nāgārjuna to realize that we have much work to do.

This essay establishes the epoch of the Kālacakra tantra, the last major *buddhavacanam* produced by Indian Buddhism. As we will see, Indian, Tibetan, and Western scholars of the Kālacakra have grappled with this issue for the better part of a millennium. The present study offers a new solution to this old problem based on a careful examination of the primary Kālacakra texts and a critical evaluation of previous interpretations.

ŚRĪ KĀLACAKRA 1.27 AND VIMALAPRABHĀ 1.9.27

The twenty-seventh verse of the first chapter of the *Śrī Kālacakra* (the Kālacakra *laghutāntra* – “condensed *tantra*”), together with its commentary in the *Vimalaprabhā*, is the *locus classicus* for all discussion of Kālacakra chronology. This passage describes the initial calculations in the Kālacakra *laghukarāṇa*, the Kālacakra handbook on astronomy imbedded in the first chapter of the *tantra*.¹

David Pingree explains the nature and purpose of *karāṇas*: “[Astro-nomical] [*siddhāntas* are comprehensive treatises deducing mean motions from the beginning of the Kalpa or the current Kaliyuga; *karāṇas* are more concise expositions of astronomy in which the mean longitudes for a time close to the date of composition are given, and the mean longitudes at later times are computed therefrom” (Pingree 1981: 13–14). Again, “*Karāṇas* . . . are distinguished from *siddhāntas* by their emphasis on pragmatic rules for computing and their avoidance of astronomical theory. One way in which this practical bent is most obviously manifested is by the elimination of reliance on the theory of the Kalpa or the Mahāyuga in determining the mean motions of the planets; their mean longitudes are rather computed from their positions

at a given epoch close in time to the date of the composition of the *karāṇa* . . .” (Pingree 1981: 32).

The first step in the Kālacakra *laghukarāṇa* calculations entails determining the current time. First the expired year – the year preceding the current year – is calculated, and then the time that has elapsed (months, days, etc.) since the end of the expired year is added to this, establishing the current time. Knowing the position of a celestial body at a given point in the past, the period of its revolution, and the current time, one can calculate the celestial body’s current position.

The Kālacakra *laghukarāṇa* reckons the expired year in an era that will be discussed below. The number of years expired in the era is fixed at the end of every sexagenary cycle (*ṣaṣṭisamvatsara*; *lo drug cu*); this number is referred to as the epoch (*dhruval/dhruvaka*; *nges pa*). It is important to note that because the epoch is fixed at the end of each sexagenary cycle, it always corresponds to the last year of the cycle. (See the Appendix for the Kālacakra tradition’s version of the *ṣaṣṭisamvatsara*.)

Thus, at the end of a sexagenary cycle the epoch is established. Then, during the course of the subsequent – i.e., one’s current – sexagenary cycle, the number of years expired in the current sexagenary cycle is added to the epoch, establishing the current expired year in the era. The expired year in the era in turn serves as the basis for calculating the number of months that have expired since the beginning of the era. With these basic principles in mind we are prepared to examine the passage from the *tantra* and its commentary.

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Śrī Kālacakra 1.27 and *Vimalaprabhā* 1.9.27

[VP (S) B 31b7–32a6; U 78.8–79.3]:

idānīm laghukarāṇam tāvad ucyate vahnau khe ’bdhau vimiśram iti |
[*Śrī Kālacakra* 1.27]

vahnau khe ’bdhau vimiśram prabhavamukhagataṃ mlecchavarṣam
prasiddham

ūnam mlecchendravarṣam karaphaṇiśaśinā śeṣam arkāhatam ca |
miśram caitrādīmāsair adharayugahataṃ khāgnicandrair vibhaktam
labdham mūrdhni praviṣṭam bhavati narapate māsapiṇḍam
viśuddham ||27||

iha dhruvako ’nityas tantrarāje ṣaṣṭisamvatsarānte punar dhruvaracanād¹
iti | iha tathāgatakālāt ṣaḍvarṣaśatair mañjuśrīkālah karāṇe
dhruvaḥ | tasmād aṣṭaśatavarṣaiḥ mlecchakālah | tasmāt
mlecchakālāt dvyāśītyadhikaśatena hīno ’jakalkikālo yenājena
laghukarāṇam viśodhitam | sa eva kālah karāṇe dhruvakam

bhavati mlecchavarṣād iti | prabhavamukhagatam iti prabhavo mukham ādir yeṣāṃ ṣaṣṭisamvatsarāṇāṃ te prabhavamukhāḥ | teṣu pratyekavartamānavarṣasya pūrvavarṣaṃ prabhavamukhagatam iti | tan miśraṃ tryadhikacatuḥśatarāśau² mlecchavarṣaṃ prasiddhaṃ bhavati | ekavarṣaṃ ādim kṛtvā yāvat ṣaṣṭivarṣaṃ tāvad vimiśraṃ prabhavamukhagatam bhavatīti | tad eva varṣaṃ sarvakaraṇāntare prasiddhaṃ bhavaty³ ādityādivāravat | tena miśraṃ⁴ tryadhikacatuḥśatavarṣarāśau iti mlecchavarṣaṃ prasiddhaṃ | mleccho madhumatī rahmaṇāvātāro mlecchadharmadeśako mlecchānāṃ tāyināṃ guruḥ svāmī | ūnaṃ mlecchendravarṣaṃ karaphaṇiśaśinā dvyaśṭiyadhikaśatena ūnaṃ karaphaṇiśaśinonam iti | sambhalaviṣaye ajakalkikālarṣaṃ tad eva laghukaraṇe varṣapiṇḍam iti | śeṣaṃ arkāhataṅ ca | tad eva varṣapiṇḍam dvyaśṭiyadhikaśatenonāvaśeṣaṃ māsapīṇḍanimittam arkāhataṃ dvādaśaguṇitaṃ māsapīṇḍam bhavati | miśraṃ caitrādimāsair iti tad eva māsapīṇḍam caitrādivarttamānamāsair miśraṃ bhavati varttamānamāsārtham iti | adharayugahatam iti tad eva māsapīṇḍam adha upari rāśāv adho rāśau māsapīṇḍam kṛtvā 'dhikamāśagrahaṇārtham yugahataṅ caturguṇitaṃ bhavati | khāgnicandrair vibhaktam iti atra sūryasya sārddhadvātriṃśanmāsair⁵ adhikamāso amāvāsyāṃ⁶ saṃkramaṇābhāvāt tena bhogo⁷ na syāt | tasmāt tadrāśiś⁸ caturguṇitā bhāgarāśir bhavati | bhāgarāśeś caturguṇite sati nimittābhāve naimittakasyāpy abhāva⁹ iti nyāyād vibhajyārāśiś caturguṇī bhavati | tasmād vibhajyārāśeḥ bhāgarāśinā labdham phalaṃ bhavati | labdham mūrdhni praviṣṭam | tad eva labdham adhikamāsapīṇḍam mūrdhni māsapīṇḍe¹⁰ rāśau praviṣṭam bhavati nara-pate māsapīṇḍam¹¹ viśuddham varttamānamāse triṃśattithigaṇitārtham iti ||27||

N.B.: I have tacitly followed VP (S) B's orthography and *sandhi* because it is the earliest extant witness for the text. v.l.: 1) U: dhruvakaraṇād. 2) U: -śatavarṣaṃ rāśau. 3) U: bhavatīty. 4) U: vimiśritaṃ. 5) U: dvātriṃśatsārddhamāsair. 6) U: 'māvāsyāṃ. 7) B: bhāgo. 8) U: tasmāt rāśi-. 9) U: naimittakasyābhāva. 10) U: māsapīṇḍa-. 11) B: māsapīṇḍa-.

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VP (T) 1.480.1–482.3:

[gnas pa bcu bzhi pa |] da ni re shig nyung ngu'i byed pa gsungs
pa | me mkha' rgya mtsho rnamshes pa'o |

(ŚK (T) 1.9.5–7:)

| me mkha' rgya mtsho rnamshes la rab byung la sogs 'das pa rnamshes
bsres kla klo'i lo ni rab tu grub |

| kla klo dbang po'i lo ni lag pa gdengs can zla bas dman pa'i lhag
 ma dag kyang nyi mas bsgyur |
 | nag pa la sogs zla ba bsres te 'og tu dus kyis bsgyur ba mkha' me
 zla bas rnam par dbye |
 | rnyed pa steng du bsres pa dag ni mi yi bdag po zla ba'i tshogs pa
 rnam par dag par 'gyur ||27
 | rgyud kyi rgyal po 'di la nges pa ni | mi rtag pa ste | lo drug cu'i
 mthar slar yang nges pa 'god pa'i phyr ro || 'dir byed pa la nges pa
 ni | de bzhin gshegs pa'i dus [mya ngan las 'das nas zhes pa la sogs
 pa] nas lo drug brgya na 'jam dpal gyi dus so || de nas lo brgyad
 brgya na kla klo'i dus so || kla klo'i dus [nas bzung ba'i lo'i tshogs]
 de las brgyad cu rtsa gnyis lhag pa'i brgya yis dman pa ni | rgyal dka'
 gang gis nyung ngu'i byed pa['i don du] rnam par sbyong ba'i rigs
 ldan rgyal dka'i dus [nas bzung ba'i lo'i tshogs byed pas] so || dus de
 nyid ni | byed pa la nges par 'gyur te | [gang la sbyor na] kla klo'i lo
 las so | (N.B.: Here Bu ston annotates VP (T) with six verses drawn
 from the *Laghutantraṭīkā* that give the Kālacakra tradition's version of
 the *ṣaṣṭisamvatsara*; see the Appendix.) | rab byung la sogs 'das pa
 zhes pa ni | lo drug cu po gang dag gi dang po rab byung yin pa de
 dag ni rab byung la sogs te | de dag las so sor da ltar ba'i lo'i snga
 ma'i lo ni rab byung la sogs 'das pa'o | | de dag gsum lhag pa'i bzhi
 brgya'i phung po la bsres pa ni | kla klo'i [mgo zug tshun chad kyi]
 lor rab tu grub par 'gyur ro || lo gcig dang por byas nas lo drug cu ji
 snyed pa de nyid ni | rab byung la sogs 'das pa rnam bsres su 'gyur
 ro || [rab byung gi] lo de nyid ni | byed pa gzhan thams cad la [lo
 rnam kyi dang por] rab tu grags pa yin te | gza' nyi ma [res gza' bdun
 gyi dang por grags pa] bzhin no || gsum lhag pa'i bzhi brgya'i lo yis
 phung po la de yis bsres pa ni | kla klo'i lor rab tu grub ste | kla klo
 ni | sbrang rtsi'i blo gros te | rahma ṇa'i 'jug pa kla klo'i chos ston pa
 po kla klo stag gzig rnam kyi bla ma dang rje bo'o || kla klo'i dbang
 po'i lo ni | lag pa gdengs can zla bas dman pa | brgyad cu rtsa gnyis
 lhag pa'i brgya yis dman pa ni | lag pa gdengs can zla bas dman pa
 ste | shambha la'i yul du rigs ldan rgyal dka'i dus kyi lo | [phri ba'i
 lhag ma] de nyid ni | nyung ngu'i byed pa la lo'i tshogs so || lhag ma
 dag kyang nyi mas bsgyur | brgyad cu rtsa gnyis lhag pa'i brgya yis
 dman pa'i lhag ma lo yi tshogs de nyid zla ba'i tshogs kyi don du nyi
 mas bsgyur ba ni | bcu gnyis kyis bsgres pa ste | zla ba'i tshogs su
 'gyur ro || nag pa la sogs pa zla ba bsres te zhes pa ni | zla ba'i tshogs
 de nyid la da ltar gyi zla ba'i don du nag pa la sogs pa'i [lo] da ltar
 ba'i zla ba ['das pa] rnam kyis bsres pa'o || 'og tu dus kyis bsgyur
 ba zhes pa ni | 'og dang steng gi phung po la zla ba'i tshogs de nyid

de | 'og gi phung po la zla ba'i tshogs byas nas lhag pa'i zla ba gzung
 ba'i don du dus kyis bsgyur ba ni | bzhi yis bsgres pa yin no || mkha'
 me zla bas rnam par dbye zhes pa ni | 'dir zla ba phyed dang bcas pa'i
 sum cu rtsa gnyis na lhag pa'i zla bar 'gyur te [zla ba re la khyim re
 mi spyod pas] gnam stong la nyi ma'i [khyim re] 'pho ba med pa'i
 phyir ro || des na [zla ba re la khyim re] longs spyod par mi 'gyur ro
 || de yi phyir phung po bzhi yis bsgyur ba ni | cha'i phung por 'gyur
 ro || [dgod byed kyī] cha yi phung po bzhi yis bsgyur bar 'gyur ba ni
 | [dgod byed cha'i phung po dang grangs mnyam pa'i] rgyu med na
 rgyu can [bzhis bsgyur ba] yang mi 'byung zhes pa'i rigs pas bgo bar
 bya ba'i phung po bzhi yis bsgyur bar 'gyur ro || de'i phyir bgo bar
 bya ba'i phung po [dang grangs mtshungs pa] la cha'i phung pos rnyed
 pa ni 'bras bur 'gyur te | rnyed pa steng du bsres pa rnyed pa lhag pa'i
 zla ba'i tshogs de nyid steng gi phung po'i zla ba'i tshogs la bsres pa
 dag ni | mi yi bdag po zla ba'i tshogs pa rnam par dag par 'gyur te |
 da ltar gyi zla ba la tshes sum cu'i rtsis kyī don du'o ||27

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Now the *laghukarāṇa* is discussed: “Add . . . to fire [3] sky [0] ocean [4] [i.e., 403].”²

Śrī Kālacakra 1.27

Add the expired *prabhava* year to fire [3] sky [0] ocean [4] – this establishes the [expired] year of the barbarian. Reduce the [expired] year of the lord of the barbarians by hand [2] snake [8] moon [1] [i.e., 182], and multiply the remainder by sun [12]. Add the [expired] months Caitra, etc. Multiply the lower [quantity] by age [4]. Divide by sky [0] fire [3] moon [1] [i.e., 130]. Add the quotient above. This produces the correct sum of [expired] months, O king. ||

The epoch (*dhruvaka; nges pa*) in the [*Śrī Kālacakra*] *King of Tantra* is transient because the epoch (*dhruva; nges pa*) is reset at the end of the sexagenary cycle.

The epoch (*dhruva; nges pa*) in the *karāṇa* – the era of [Kalkin] Mañjuśrī [Yaśas] – is six hundred years after the era of the Tathāgata. The era of the barbarian is eight hundred years after that. The era of Kalkin Aja – the Aja who corrected the *laghukarāṇa* – is one hundred and eighty-two years prior to that era of the barbarian. That very era [of Aja] is the epoch (*dhruvaka; nges pa*) in the *karāṇa*, [calculated] from the barbarian year.

Regarding, “the expired *prabhava* year”: *Prabhava* is the beginning – i.e., the first – of the sexagenary cycle that begins with *prabhava*. The year preceding the particular current year among these is the expired *prabhava* year. Adding that to the quantity four hundred and three establishes the [expired] barbarian year. Having made one year the

first, adding up to sixty years produces the expired *prabhava* year. That very [expired *prabhava*] year is established in all the other *karaṇas*, like Sunday and the other days of the week.³ Adding that to the quantity four hundred and three years establishes the [expired] barbarian year.

The barbarian is Muḥammad, the incarnation of ar-Raḥmān, the teacher of the barbarian dharma, the guru and leader of the barbarian Tāyin (*mleccho madhumatī raḥmaṇāvātāro mlecchadharmadeśako mlecchānām tāyinām guruḥ svāmī*).

Regarding, ‘reduce the [expired] year of the lord of the barbarians by hand [2] snake [8] moon [1]’: Reducing it by one hundred and eighty-two is reducing it by hand [2] snake [8] moon [1]. That very year in the era of Kalkin Aja in the land of Sambhala is the sum of [expired] years (*varṣaṇḍam; lo’i tshogs*) in the *laghukaraṇa*.

‘Multiply the remainder by sun [12]’: That very sum of [expired] years that remains [when the expired *mleccha* year] has been reduced by one hundred and eighty-two is multiplied by sun [12] to indicate the sum of [expired] months (*māsapaṇḍam; zla ba’i tshogs*) – multiplied by twelve it produces the sum of [expired] months. “Add the [expired] months Caitra, etc.”: The current [year’s expired] months Caitra, etc., are added to that very sum of [expired] months to produce the current [expired] month.

“Multiply the lower [quantity] by age [4]”: [Set] that very sum of [expired] months as a lower and an upper quantity; taking the lower quantity as the sum of [expired] months, multiply it by age [4] – multiply by four – to determine the intercalary months. “Divide by sky [0] fire [3] moon [1] [i.e., 130]”: Here, after thirty-two and one-half months there is an intercalary month because the sun has not entered a new sign of the zodiac on the new moon, and thus its transit is not complete. Therefore, that quantity [thirty-two and one-half] multiplied by four produces the divisor. When the divisor has been multiplied by four, the dividend is multiplied by four, because of the rule “when the cause is non-existent, the effect is non-existent as well.” Therefore, the quotient is the result obtained by dividing the dividend by the divisor. ‘Add the quotient above’: adding that very quotient, the sum of intercalary months, to the quantity above that is the sum of [expired] months, produces the correct sum of [expired] months, O king, in order to calculate the thirty lunar days of the current month.

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This passage raises a number of issues that are too complex to be treated here: at present we are only concerned with determining

the epoch mentioned in the *tantra*, which serves as the basis of its chronology, and thus its astronomy.⁴ As we can see, at the time this passage of the *Śrī Kālacakra* and the *Vimalaprabhā* was composed the epoch utilized in the Kālacakra *laghukaraṇa* was derived from the *mleccha* (“barbarian”) year 403. To the *mleccha* year 403 add the numerical value of the expired *prabhava* year, i.e., the number of the sexagenary cycle year preceding the current year, and subtract 182. The result is the sum of expired years (*varsapīṇḍam; lo’i tshogs*) – the number of complete years that have expired in the era of Kalkin Aja.

The sum of expired years multiplied by 12 produces an initial approximation of the sum of expired months (*māsapīṇḍam; zla ba’i tshogs*). However, because twelve synodic (“lunar”) months amount to less than one tropical (“solar”) year, it is necessary periodically to intercalate a month in order to maintain a rough correlation between the vernal equinox and the new moon of Caitra, the first day of the year. According to the *tantra* and the *Vimalaprabhā*, a month must be intercalated every 32.5 months. The initial approximation of the sum of expired months plus the sum of intercalary months equals the correct sum of expired months (*māsapīṇḍam viśuddham; zla ba’i tshogs pa rnam par dag pa*), the exact number of months that have expired since the beginning of the era.

Let us assume we are at Caitra 1 (i.e., New Year’s Day) in the *mleccha* year 404. The expired *mleccha* year is 403. $403 \times 12 = 4836$, the initial approximation of the sum of expired months. $4836 \div 32.5 = 148$, the integer of intercalary months that have occurred since the beginning of the *mleccha* era. $4836 + 148 = 4984$, the correct sum of months that have expired since the beginning of the *mleccha* era.

Because the *mlecchas* – i.e., the Muslim followers of Muḥammad – use a calendar in which a year consists of twelve synodic months, we can divide the correct sum of months by 12 to ascertain the corresponding expired year in their calendar: $4984 \div 12 = 415$, the integer of expired years in the era of Muḥammad. In other words, the *mleccha* year 403 given in *Śrī Kālacakra* 1.27 corresponds to 415 AH, which began on 15 March 1024 CE and ended on 3 March 1025 CE (Freeman-Grenville 1963: 27). It is noteworthy that the Indian year and the Muslim year commenced almost simultaneously in 1024 CE (Pillai 1922: 50).

We are quite safe in assuming that *mleccha* 403 in the *Śrī Kālacakra* and the *Vimalaprabhā* derives from a Muslim source. That is, either the author of the *tantra* or his Muslim informant converted the lunar *hijrī* year 415 into a solar calendar reckoning compatible with the Indian astronomical tradition followed by the Kālacakra. Thus, if we use 415

AH and reverse the preceding calculations we get the following: $415 \times 12 = 4980$, the correct sum of expired months. $4980 - 148$ (the integer of intercalary months) = 4832, the sum of expired months. $4832 \div 12 = 402$ solar years and 8 lunar months. 1 AH begins on 16 July 622 CE (Freeman-Grenville 1963: 2). 402 solar years, 8 lunar months after the beginning of 1 AH takes us to a date in March 1025 CE. Again, *mleccha* 403 – a solar calendar calculation of 415 AH – corresponds to 1024/25 CE.

The calculations discussed in *Śrī Kālacakra* 1.27ab and *Vimalaprabhā* 1.9.27ab can be expressed in two equations, where x = expired sexagenary cycle year; m = expired *mleccha* year; a = expired year of Aja, the epoch in the *Kālacakra laghukaraṇa*:

$$403 + x = m; m - 182 = a$$

During *prabhava*, the initial year of the sexagenary cycle current when the *Śrī Kālacakra* and the *Vimalaprabhā* were completed, the expired sexagenary cycle year was *kṣaya*, the sixtieth and last year of the preceding sexagenary cycle, and zero years had expired during the current cycle. Thus, for this *prabhava* year we can solve the equations as follows:

$$403 + 0 = 403; 403 - 182 = 221$$

Therefore, during the initial year of the sexagenary cycle current when the *Śrī Kālacakra* and the *Vimalaprabhā* were completed the expired *mleccha* year was 403, and the expired year of Kalkin Aja, the epoch in the *Kālacakra laghukaraṇa*, was 221.

We can tabulate the preceding findings as follows, noting that in this and subsequent tables only the years italicized in brackets are given in the texts; all other years are the results of calculation:

Śrī Kālacakra 1.27 and *Vimalaprabhā* 1.9.27
(completed after 1024/25 CE)

CE	AH	<i>Mleccha</i> Year	<i>Śaka Year</i>	<i>Aja Year/ Epoch</i>	<i>Prabhava</i> Year
1024/25	415	[403]	947	221	60 <i>kṣaya</i>

Having established that *mleccha* 403 = 1024/25 CE, we are prepared to determine the initial years of all the eras mentioned in *Śrī Kālacakra* 1.27 and *Vimalaprabhā* 1.9.27 in the chronology of the Common Era:

<i>Era</i>	<i>Common Era Year</i>
<i>mleccha</i> 403	1024/25 CE
Aja 1	804/5 CE
<i>mleccha</i> 1	622/23 CE
Kalkin Mañjuśrī Yaśas 1	179/78 BCE
Tathāgata 1	779/78 BCE

At the time the Kālacakra *tantra* appeared in India there were two modes of reckoning the sexagenary cycle year, a so-called “North Indian” system and a so-called “South Indian” system. For our purposes the most important difference between the two systems is the fact that the North Indian system regularly expunges a year from the sexagenary cycle every eighty-five or eighty-six solar years whereas the South Indian system posits a simple one-to-one correspondence between the solar year and the sexagenary cycle year. Since the North Indian cycle expunges years, over time a sexagenary cycle year calculated according to its formula falls behind the corresponding year in the South Indian cycle. During the middle of the 9th century CE the two systems were synchronous, but by the third decade of the 11th century CE – the period of the completion of the *Śrī Kālacakra* and the *Vimalaprabhā* – the North Indian sexagenary cycle began two years before the South Indian cycle (Pillai 1922: 50–56). Both systems permit the determination of a sexagenary cycle year based on its corresponding Śaka era year.

The North Indian system is given in Varāhamihira’s *Brhatsamhitā* 8.20–21ab:

gatāni varṣāṇi śakendrakālādd hatāni rudrair guṇayec caturbhiḥ |
navāṣṭapañcāṣṭayutāni kṛtvā vibhājayec chūnyaśarāgarāmāiḥ ||20||
labdhena yuktaṃ śakabhūpakalaṃ saṃśodhya ṣaṣṭya . . . | 21ab

“Multiply the expired Śaka year by *rudra* [11]; multiply by 4; add 8589; divide by zero [0] arrow [5] mountain [7] *rāma* [3] [i.e., 3750]; add the quotient to the [expired] Śaka year; remove complete sexagenary cycles;” the remainder is the number of the expired sexagenary cycle year, commencing with *prabhava*.

This can be formulated as an equation, where s = expired Śaka year, C = complete sexagenary cycles, x = expired sexagenary cycle year:

$$\frac{44s + 8589}{3750} + s = 60C + x$$

Since *mleccha* 403/1024–25 CE corresponds to Śaka 947/expired Śaka 946, we can solve the equation as follows:

$$\frac{(44 \times 946) + 8589}{3750} + 946 = 15, \text{ remainder } 59$$

Thus, according to Varāhamihira's formula, in 1024–25 CE/Śaka 947/*mleccha* 403 the expired sexagenary cycle year was the fifty-ninth year of the cycle, and the current year of the cycle was *kṣaya*, the sixtieth and last year of the cycle. This coincides with our interpretation of the *Śrī Kālacakra* and the *Vimalaprabhā*.

In the South Indian system the formula for determining a *current* sexagenary cycle year based on an expired Śaka year is as follows: 'To the expired Śaka year add 12; the sum divide by 60; the remainder gives the number of the current sexagenary cycle year, commencing with *prabhava*.' This can be expressed as an equation where s = expired Śaka year; C = complete sexagenary cycles; and c = current sexagenary cycle year:

$$s + 12 = 60C + c$$

If we again use 946 as s :

$$\frac{946 + 12}{60} = 15, \text{ remainder } 58$$

Thus, given the reckoning of *mleccha* 403 made above, according to the South Indian system *mleccha* 403 corresponds to the fifty-eighth year of the cycle. Since *mleccha* 403 necessarily corresponds to *kṣaya*, the sixtieth and last year of the cycle, it appears that the *tantra* presupposes the North Indian rather than the South Indian system of calculating the sexagenary cycle year.

Therefore, I believe that the *Śrī Kālacakra* and the *Vimalaprabhā* presuppose a solar calendar calculation of the number of years that had expired since the Hijra, and Varāhamihira's North Indian system of reckoning the sexagenary cycle year. As we will see, the later Indian and Tibetan Kālacakra traditions, and previous Western scholars, offer different interpretations.

THE KĀLACAKRĀVATĀRA OF ABHAYĀKARAGUPTA

As the *Vimalaprabhā* notes, "the epoch is reset at the end of the sexagenary cycle." Thus, at the end of the sexagenary cycle current

at the time the *Śrī Kālacakra* and the *Vimalaprabhā* were completed, the *mleccha* year – the basis for the calculation of the epoch – was either 59 or 60 years in advance of 403, depending on whether or not a sexagenary cycle year had been expunged during the cycle just ended. And in fact that is precisely what we find in the *Kālacakrāvātāra* of Abhayākaragupta (fl. 11th–12th c. CE⁵): “(First) one should write four hundred and sixty-three.” MS 1a2: | *triṣaṣṭyadhikaṃ śatacatuṣṭaya[m] likhanīyaṃ* |. P 2098; bsTan ’gyur rGyud ’grel NGA 306a7: | *dang po gsum dang drug cu lhag pa’i bzhi brgya bri bar bya’o* |. Thus, Abhayākaragupta’s *mleccha* 463 occupies the same position in the sexagenary cycle as the *Śrī Kālacakra* and the *Vimalaprabhā*’s *mleccha* 403; i.e., it corresponds to *kṣaya*, the last year in the cycle.

Although Abhayākaragupta does not provide a formula for reckoning the sexagenary cycle year based on its corresponding year in another era, we know that he presupposes the South Indian sexagenary cycle system because in the North Indian system a year was expunged during the cycle preceding his resetting of the epoch. That is, if one follows the North Indian system the final year of the sexagenary cycle corresponds to *mleccha* 462, not *mleccha* 463 as is the case if one uses the South Indian system. Given this fact, we can tabulate Abhayākaragupta years as follows:

Abhayākaragupta, *Kālacakrāvātāra*
(composed after 1086/87 CE)

CE	<i>Mleccha</i> Year	<i>Śaka</i> Year	<i>Aja</i> Year/ Epoch	<i>Prabhava</i> Year
1026/27	403	949	221	60 <i>kṣaya</i>
1086/87	[463]	1009	281	60 <i>kṣaya</i>

DĀNAŚRĪMITRA’S APPENDIX TO THE KĀLACAKRĀVĀTĀRA MS

Dānaśrīmitra’s appendix to the unique Sanskrit manuscript of the *Kālacakrāvātāra* provides information that supports our interpretation of Abhayākaragupta’s position: “The [expired] Śaka years are 1047. Add *rudra* [11] to the [expired] Śaka year; divide by sixty; the remainder expresses the [number of the expired] *prabhava*, etc., [year] to be added to [the *mleccha* year] fire [3] season [6] ocean [4] [i.e., 463, given in Abhayākaragupta’s *Kālacakrāvātāra*], just as there are 38

[expired] *prabhava* cycle years in this current year. This was written by Śrī Dānaśrīmitra.” MS 7b7–8: *śakābdāḥ 1047 śakābde rudraṃ miśrayitvā śaṣṭibhāgena śeṣaḥ prabhavādijñātavyo vahnrytvabdḥau prakṣepāya | yathaiśama samvatsare prabhavādivarṣāṇi 38 alekh idam śrīdānaśrīmitrenaiti* || (cf. the readings in Shāstri 1917: 162).

Thus, Dānaśrīmitra follows the South Indian system of calculating sexagenary cycle years. Since he specifies that one adds 11, rather than 12, to the Śaka year, it is clear that he is calculating his *expired*, rather than his *current*, sexagenary cycle year. We can express Dānaśrīmitra’s version of this formula in an equation, where s = expired Śaka year, C = complete sexagenary cycles, and x = expired sexagenary cycle year:

$$s + 11 = 60C + x$$

If we use Dānaśrīmitra’s 1047 for s :

$$\frac{1047 + 11}{60} = 17, \text{ remainder } 38$$

Furthermore, since the expired Śaka year plus 77 is equivalent to the expired year of the Common Era, we also know the CE equivalent of Dānaśrīmitra’s expired Śaka 1047/expired sexagenary cycle year 38:

$$1047 + 77 = 1124 \text{ 25 CE} = \text{sexagenary cycle year } 38$$

Dānaśrīmitra’s calculations, and his implied reckoning of *mleccha* 403, can be tabulated as follows:

Dānaśrīmitra, Appendix to *Kālacakrāvātāra* MS
(composed 1125/26 CE)

<i>CE</i>	<i>Mleccha</i> <i>Year</i>	<i>Śaka Year</i>	<i>Aja Year/</i> <i>Epoch</i>	<i>Prabhava</i> <i>Year</i>
1026/27	403	949	221	60 <i>kṣaya</i>
1086/87	[463]	1009	281	60 <i>kṣaya</i>
1124/25	[463] + [38] = 501	[1047]	319	[38] <i>virodhin</i>

Thus Dānaśrīmitra, like Abhayākaragupta, by employing the South Indian system of reckoning the sexagenary cycle year, implicitly places the Śrī Kālacakra’s *mleccha* 403 two years after our reckoning. Again,

this is due to the fact that the South Indian system, in contrast to Varāhamihira's North Indian system, does not expunge sexagenary cycle years, but instead posits a simple one-to-one correspondence between sexagenary cycle years and Śaka era years.

THE KĀLACAKRĀNUSĀRI-GAṆITA

The anonymous *Kālacakrānusāri-gaṇita* (*sic*), found in the Tibetan *bsTan 'gyur* under the title *Dus kyi 'khor lo'i rtsis kyi man ngag* (**Kālacakraṅgaṇitopadeśa*), provides additional information relevant to the problem of the epoch of the Kālacakra *tantra*. At the time the *Kālacakrānusāri-gaṇita* was composed (i.e., 1169/70 CE), the expired year was calculated on the basis of the *mleccha* year 523: “For the current [expired] year add the [expired] *prabhava*, etc., year to the epoch consisting of five hundred and twenty-three.” MS 1b8: *tatra ca trayoviṃśatyadhikapañcaśatātmake dhruvake varttamān[avarṣārthe] prabhavādivarṣaḥ kṣepaḥ kāryaḥ* | (MS fragmentary; text in brackets restored from the Tibetan). P 5900; *bsTan 'gyur mDo 'grel PO 267a1*: | *de la yang lnga brgya dang nyi shu rtsa gsum gyi bdag nyid la da ltar gyi lo'i dhru va ka'i don du rab byung la sogs pa'i lo gzug par bya'o* |. Again, “Thus, five hundred and twenty-three together with the [expired] *prabhava*, etc., years establishes the [expired] *mleccha* years.” MS 2a6–7: | *tena prabhavādisahitāni trayoviṃśatyadhikapañcaśatāni mlecchavarṣāni prasiddhāni bhavanti*. P 267a7–8: | *des na rab byung la sogs pa dang lhan cig lnga brgya dang nyi shu rtsa gsum ni kla klo'i lo rab tu grags* |. In other words, just as Abhayākara-gupta had reset the baseline *mleccha* year at 463, the author of the *Kālacakrānusāri-gaṇita* reset it at 523. This implies that the *Kālacakrānusāri-gaṇita* follows the South Indian system of reckoning the sexagenary cycle year because no sexagenary cycle years have been expunged during the period between the Śrī Kālacakra's *mleccha* 403 and the *Kālacakrānusāri-gaṇita*'s *mleccha* 523. If, on the contrary, Varāhamihira's North Indian sexagenary cycle system is employed, a sexagenary cycle year must be expunged during this period.

The preface to the *Kālacakrānusāri-gaṇita* contains further information pertinent to its version of the Kālacakra chronology: “OM. Homage to the Buddha! The [expired] Śaka year is 1091; the [expired] *mleccha* year is 546; the correct [expired] year is 364 . . . the year 221 remains when fire [3] sky [0] ocean [4] – 403 – is reduced by hand [2] snake [8] moon [1] [i.e., 182].” MS 1b1–2: *oṃ namo buddhāya || śakābda 1091 mleccha[varṣa 546] śuddhavarṣa 364 . . . vahnau khe 'bdhau 403*

karaphaṇiśaśihṛte '[*vaśiṣṭaṃ varṣa 221*] (MS damaged; text in brackets is reconstructed based on other passages in the MS and the Tibetan translation). P 266b2–4: | *sangs rgyas la phyag 'tshal lo || sha ka'i lo 1091 kla klo'i lo 546 dag pa'i lo 364 . . . me mkha' rgya mtsho 403 la lags pa gdengs can zla ba'i phri ba'i lhag pa'i lo 221*.

We can tabulate the preceding information as follows:

Anonymous, *Kālacakrānusāri-gaṇita* (composed 1169/70 CE)

<i>CE</i>	<i>Mleccha Year</i>	<i>Śaka Year</i>	<i>Aja Year/ Epoch</i>	<i>Prabhava Year</i>
1026/27	[403]	949	[221]	60 <i>kṣaya</i>
1086/87	463	1009	281	60 <i>kṣaya</i>
1046/47	[523]	1069	341	60 <i>kṣaya</i>
1169/70	[546]	[1091] (<i>sic!</i>)	[364]	23 <i>virodhin</i>

When we compare this table with those we created for Abhayākaragupta and Dānaśrīmitra, we see that the first two rows agree in all three tables. Also, the *Kālacakrānusāri-gaṇita* simply adds 120 years – i.e. two full sexagenary cycles with no expunged years – to *mleccha* 403 to arrive at 523 for its baseline *mleccha* year. This implies that it – like Abhayākaragupta and Dānaśrīmitra – follows the South Indian version of the sexagenary cycle. However, a discrepancy arises when we examine the *Kālacakrānusāri-gaṇita*'s Śaka year: if we follow Abhayākaragupta and Dānaśrīmitra, the Śaka year corresponding to *mleccha* 546 is 1092, not 1091.

Furthermore, the *Kālacakrānusāri-gaṇita* provides a formula for calculating the sexagenary cycle year that is incompatible with some of the information tabulated above:

* * * * *

The sexagenary cycle years *prabhava*, etc., are determined as follows: As it is said:

Multiply the expired Śaka year by *rudra* [11]; multiply by 4; add 489; divide by zero [0] arrow [5] mountain [7] *rāma* [3] [i.e., 3750]; add the quotient to the [expired] Śaka year; remove complete sexagenary cycles; [the remainder is the number of the expired] *prabhava*, etc., year.⁶

This means: Multiply the expired years of the king known as Śaka by eleven and then multiply them by four. “Add 489” means add four

hundred and eighty-nine. “Divide by zero [0] arrow [5] mountain [7] *rāma* [3]” means divide by thirty-seven hundred and fifty; the fraction is dropped. The [expired] Śaka years plus the quotient is divided by sixty, and the remainder is [the number of the expired] *prabhava*, etc. year. The quotient, which represents complete sexagenary cycles of *prabhava*, etc., is not retained. The individual names of the sixty years – *prabhava*, etc. – according to sequence of the *mlecchas*, etc., are well known; I have not written them out of concern for becoming too long-winded.

* * * * *

MS 1b8–2a6:

prabhavā[divarṣāni. . . (MS illegible)]
 [gatāni varṣāni śakendrakaladd hatāni rudrair guṇayec caturbhiḥ |]
 navāṣṭacatvariūtāni kṛtvā vibhājayec chūnyaśarāgarāmaiḥ |
 labdhena yuktaṃ śakabhupakālam¹ samśodhya ṣaṣṭyā prabhavādivarṣa [||]
 iti | asyāyam arthaḥ | śakākhyasya rājño gatāni varṣāni ekādaśatir guṇānīyāni punar
 caturbhir² guṇānīyāni [|] navāṣṭacatvariūtāni kṛtveti ūnavatyadhikacaturbhiḥ śatair
 yutāni kāryāni | vibhājayec chūnyaśarāgarāmair iti | pañcaśaduttarasaptatrimśacchatair
 vibhājya bhāgaśeṣo lopya | labdhā sahitā śakavarṣā ṣaṣṭibhāgā viśeṣā prabhavādivarṣā
 bhavanti | labdhiḥ prabhavādiṣaṣṭisamvatsarā paripūrṇnalakṣaṇa na grahya |
 prabhavādāya mlecchakādikramena ṣaṣṭiparyantā svasvanāma prasiddhā na likhita
 granthagauravabhayāt |
 v.1.: 1) MS: -kālām. 2) MS: catubhir.

* * * * *

P 267a2–7:

rab byung la sogs pa'i lo drug cu rnams 'di ltar bsgrub par bya ste | de skad du [|]
 [|] sha ka dbang po'i 'das lo rnams [|]
 [|] drag pos bsgyur zhing yang bzhis bsgyur |
 | dgu brgyad bzhi dang ldan byas nas |
 | stong pa mda' ri 'dod pas bgo |
 | rnyed pa sha ka'i lo bcas pa |
 | drug cus dag byas rab byung sogs |
 | zhes pa ['di yin nam brtag] 'di'i don ni 'di yin te || sha ka zhes bya ba'i rgyal po
 'das pa'i lo rnams bcu gcig gis bsgyur nas slar yang bzhis bsgyur bar bya'o || dgu
 brgyad bzhi dang ldan byas nas || zhes pa bzhi brgya dang brgyad cu rtsa dgu ldan
 par bya'o || stong pa mda' ri 'dod pas bgo || zhes pa khri (sic! read: ni) sum stong
 bdun brgya lnga bcus bgos pa'i lhag ma byis te rnyed pa dang lhan cig pa'i sha
 ka'i lo drug cus bgos pa'i lhag ma ni || rab byung la sogs pa'i lor 'gyur ro || rnyed
 pa ni rab byung la sogs pa'i lo drug cu rdzogs pa'i mtshan nyid yin pas mi gzung
 ngo || rab byung la sogs pa dang kla klo la sogs pa'i rim pas drug cu'i mthar thug
 pa'i rang rang gi ming ni rab tu grags pa dang gzung mangs pa'i 'jigs pas ma bris
 so |

* * * * *

Thus it is apparent that the *Kālacakrānusāri-gaṇita* advocates a modified version of the North Indian system of reckoning sexagenary cycle years. We can formulate its version in the following equation, with the variables as previously given:

$$\frac{44s + 489}{3750} + s = 60C + x$$

If we use its Śaka year 1091 as s , we get the following solution:

$$\frac{(44 \times 1091) + 489}{3750} + 1091 = 18, \text{ remainder } 23$$

It seems that the author of the *Kālacakrānusāri-gaṇita* has conflated two incompatible systems of reckoning the sexagenary cycle year: it appears that he has imported a modified version of the North Indian system into a tradition that followed the South Indian system. If such a procedure were carried out systematically, chaos would result. For example, Varāhamihira's formula equates Śaka 1066 and the last year of the cycle; the South Indian system equates Śaka 1069 and the last year of the cycle; the *Kālacakrānusāri-gaṇita*'s formula equates Śaka 1068 and the last year of the cycle. This suggests that at the time the *Kālacakrānusāri-gaṇita* was composed there was confusion within the Indian Kālacakra tradition regarding the determination of the epoch.

THE DPAL DUS KYI 'KHOR LO'I RTSIS KYI BSTAN BCOS MKHAS PA
RNAMS DGA' BAR BYED PA OF BU STON RIN CHEN GRUB

Thus far we have refrained from referring to the indigenous Tibetan interpretations of *Śrī Kālacakra* 1.27 and *Vimalaprabhā* 1.9.27, preferring first to interpret the *tantra* and its commentary based on their own statements and our knowledge of the date of the Hijra, and then to examine the later Indian methods of reckoning the year that corresponds to *mleccha* 403. However, it is noteworthy that an influential Tibetan interpretation of this passage does not entirely agree with any of the solutions provided above.

The Tibetan Kālacakra scholar Bu ston Rin chen grub (1290–1364 CE), writing in 1326 CE, reports that Tibetan interpretations of *Śrī Kālacakra* 1.27 and *Vimalaprabhā* 1.9.27 prior to his time were a mass of incoherent contradictions (Bu ston 1326: 82b4–85a1; pp. 778.4–783.1). This report indicates that a number of leading Tibetan Kālacakra scholars prior to Bu ston were ignorant of Indian methods of reckoning sexagenary cycle years. A synopsis of Bu ston's own view follows:

* * * * *

Here, the epoch taught in the [*Śrī Kālacakra*] *tantra* and the [*Vimalaprabhā*] commentary is as follows: ... in the Wood-Male-Monkey year [i.e., 624/25 CE] the *mleccha* dharma appeared in the land of Mecca ... One hundred and eighty-two years after that, in the Fire-Male-Dog year called *avyaya* [i.e., 806/7 CE], Kalkin Aja composed the [Kālacakra] *laghukarāṇa*. Two hundred and twenty-one years after that, in the year *prabhava* [i.e., 1027/28 CE], three things occurred simultaneously: this correct astronomy arrived south of the Śītā River [i.e., appeared in India]; four hundred and three years after the appearance of the *mleccha* [i.e., Muḥammad] elapsed; and two hundred and twenty-one was established as the correct year [*lo dag* = *śuddhavarṣam*] to serve as the basis for calculations in the [*Śrī Kālacakra*] *laghutāntra*. From then up to the current *kṣaya* year [i.e. 1326/27 CE] one [year] less than five sexagenary cycles [i.e., 299 years] have passed; ... seven hundred and two [years] have passed since the appearance of the *mleccha*; five hundred and twenty years have passed since Kalkin Aja composed the *laghukarāṇa*. Therefore, with regard to establishing *vahnau khe 'bdhau* [403] as the basis: since four hundred and three had been established as the correct year in the *mleccha* astronomy when this [Kālacakra] astronomy appeared south of the Śītā River, it was established as the basis [in the Kālacakra astronomy as well].

* * * * *

Bu ston 1326: 84a4–84b3; pp. 781.4–782.3: |'dir rgyud 'grel las gsungs pa'i nges pa ni | 'di yin te | ... shing pho spre lo la ma kha'i yul du kla klo'i chos byung ste ... || de nas lo brgya brgyad cu rtsa gnyis song ba mi zad pa zhes bya ba me pho khyi lo la | rigs ldan rgyal dkas nyung ngu'i byed pa mdzad de | de nas lo nyis brgya nyer gcig song ba dang | rab byung gi lo la rtsis rnam par dag pa 'di chu bo shī ta'i lho phyogs su byon pa dang | kla klo byung nas lo bzhi brgya dang gsum lon pa dang | bsdus rgyud kyi rtsis gzhi lo dag la nyi brgya nyer gcig 'jog pa dang gsum dus mnyam mo || de nas da lta'i zad byed kyi lo yan chad la drug cu skor lnga ru gcig gis chad pa song ste ... kla klo byung nas bdun brgya dang gnyis song | rigs ldan rgyal dkas nyung ngu'i byed pa mdzad nas lo lnga brgya nyi shu song ba yin no || de'i phyir me mkha' rgya mtsho gzhir 'jog pa ni | rtsis 'di chu bo shī ta'i lhor byung ba na kla klo'i rtsis la bzhi brgya dang gsum lo dag tu 'jog pas de gzhir 'jog pa yin ...

* * * * *

We can tabulate Bu ston's interpretation as follows, again noting that only those years italicized within square brackets are explicitly given in Bu ston's text:

Bu ston Rin chen grub, *mKhas pa rnams dga' bar byed pa*
(composed 1326 CE)

<i>CE</i>	<i>Mleccha Year</i>	<i>Epoch/Correct Year</i>	<i>Prabhava Year</i>
624/25	1st	...	[<i>Wood-Male-Monkey</i>] = no. 18, <i>tarāṇa</i>
806/7	[182]	1st	[<i>Fire-Male-Dog/avyaya</i>] = no. 20
1027/28	[403]	[221]	[<i>prabhava</i>] = no. 1
1326/27	[702]	[520]	[<i>kṣaya</i>] = no. 60

We first note that Bu ston, unlike Dānaśrīmitra and the *Kālacakrānusāri-gaṇita*, offers no formula for reckoning sexagenary cycle years: his reckonings are simple assertions given without demonstration. Nevertheless, it is apparent from Bu ston's discussion (and from the traditional Tibetan application of the sexagenary cycle) that he assumes a sexagenary cycle system devoid of expunged years, the South Indian system.

Abhayākaragupta, Dānaśrīmitra, and the *Kālacakrānusāri-gaṇita* would all agree with Bu ston that 1027/28 CE corresponds to *prabhava*, the first year of the sexagenary cycle. That is, if 1026/27 CE corresponds to *kṣaya*, the last year of the cycle, then the following year corresponds to *prabhava*. However, Bu ston asserts that this *prabhava* year, the first year of the first Tibetan sexagenary cycle, is itself identical to *mleccha* 403 and Aja 221. This is an error. If *mleccha* 403 is taken to be the sexagenary cycle year *prabhava*, then the initial and fundamental astronomical calculation in the Kālacakra *laghukaraṇa* is flawed. That is, adding the numerical value of the expired sexagenary cycle year to *prabhava* – i.e., to 1 – establishes the number of the *current* year, and adding the elapsed time (e.g., the expired months) in the current year to that does not establish the correct current time, but rather an irrelevant time in the coming year.

Therefore, it is clear that Bu ston was correctly informed about the identity of his current year in the sexagenary cycle according to the

Indian tradition represented by Abhayākaragupta and Dānaśrīmitra, and thus he was able to calculate accurately the number of years that had elapsed since the initial year of the sexagenary cycle current during the completion of the *tantra* according to that school of interpretation. However, he appears to have misconstrued the intention of *Śrī Kālacakra* 1.27 and *Vimalaprabhā* 1.9.27: he seems to have erroneously inferred that the *Vimalaprabhā*'s statement that *prabhava* is the first year of the sexagenary cycle implies that *mleccha* 403 itself corresponds to this year.⁷ Although this error has only relatively minor consequences for Bu ston's tradition of Kālacakra chronology, its implications for Tibetan astronomy are profound: an error made in calculating the correct year vitiates all subsequent astronomical calculations.

WESTERN STUDIES

There is no need to review in detail the voluminous writings of Western scholars grappling with the Kālacakra chronology and its application in Tibet. In what follows we merely touch on some of the more important and influential works on this topic as they relate to the issue at hand (see also Grönbold 1991; Ruegg 1992).

In 1834 the pioneer of Tibetology Alexander Csoma de Kőrös provided an appendix to his *A Grammar of the Tibetan Language in English* in which he studied, *inter alia*, the Tibetan application of the Indian sexagenary cycle and the chronological table (composed in 1687 CE) found in the *Baidūrya dkar po* of sDe srid Sangs rgyas rgya mtsho. Csoma notes that the Tibetan sexagenary cycle coincides with the South Indian sexagenary cycle except for the fact that the Tibetans reckon “the beginning of the first cycle from the year 1026 [*sic!*] of the Christian Era; but the Indians date the commencement of the first cycle from an anterior epoch . . .” (Csoma de Kőrös 1834: 148). In his treatment of sDe srid Sangs rgyas rgya mtsho's chronological table Csoma reckons a number of dates in the Kālacakra chronology in the Common Era, including: (1) the initial year of the *mleccha* era (622 CE); (2) the initial year of Aja – the epoch in the Kālacakra *laghukaraṇa* (804 CE); (3) the date of the introduction of the Kālacakra into India (965 CE); and (4) the initial year of the first Tibetan sexagenary cycle (1025 CE; *sic!*) (Csoma de Kőrös 1834: 181–84, 192). In particular, Csoma notes: “If we add these 403 [*mleccha*] years to 622, the first year of the Hegira, we have exactly the year 1025, whence with 1026 commences the first year of the cycle of 60 years of the Tibetans” (Csoma de Kőrös 1834: 195).

However, in 1913 P. Pelliot demonstrated that Csoma's reckoning of the initial year of the first Tibetan sexagenary cycle is incorrect, and that the initial year in fact corresponds to 1027/28 CE (Pelliot 1913; see also Laufer 1913). In fact, Csoma's erroneous reckoning of the initial year of the first Tibetan sexagenary cycle, and his other computational errors noted below, appear to have originated in his mistaken supposition that the Tibetan understanding of Kālacakra chronology was founded on a correct reckoning of the Hijra, whereas the Tibetans, and the Indian tradition they followed, are two years off. Thus, confusion about Islamic influence on Kālacakra chronology was the ultimate source of an error that haunted the first eighty years of Tibetology. Also, in attempting to align sDe srid Sangs rgyas rgya mtsho's dates with the actual date of the Hijra, Csoma's table sometimes confuses current years with expired years, and thus all of his dates given above must be increased by two years to accurately reflect sDe srid Sangs rgyas rgya mtsho's understanding of Kālacakra chronology: (1) 624 CE; (2) 806 CE; (3) 967 CE; (4) 1027 CE. When this is done, we can see that sDe srid Sangs rgyas rgya mtsho follows Bu ston's reckoning of these dates, except for the fact that Bu ston places the introduction of the Kālacakra in India in 1027 CE, whereas sDe srid Sangs rgyas rgya mtsho, following the view of some earlier Tibetan historians, places it in 967 CE, i.e., at the beginning of the preceding sexagenary cycle.

More recent Western scholars have in effect followed a corrected version of Csoma's representation of Kālacakra chronology. George N. Roerich, in accord with Csoma's corrected dating, believed that the Kālacakra chronology erroneously dates the Hijra at 624 CE, and therefore that the era of Kalkin Aja begins in 806 CE (Roerich 1949: 753–54). Beginning in 1956, Helmut H. R. Hoffmann repeatedly asserted that the Kālacakra was introduced into India in 966 CE (or 967, or 965 – he equivocates), which, as we have seen, simply reproduces the opinion of sDe srid Sangs rgyas rgya mtsho and some other Tibetan historians (cf. Newman 1987: 156–57).

In 1964 Claus Vogel published a useful essay "On Tibetan Chronology." Following the lead offered by Csoma, Vogel formally demonstrated the synchronism of the South Indian and the Tibetan versions of the sexagenary cycle. However, in the process Vogel misunderstood and misrepresented the North Indian version of the sexagenary cycle. He states that in the North Indian system the sexagenary cycle begins with the year *vijaya* (Vogel 1964: 234), whereas in fact both the North and the South Indian systems agree that *prabhava* is the initial year of the cycle.⁸ This error, together with the fact that Vogel did not attempt

to apply the North Indian system to the initial year of the first Tibetan sexagenary cycle, obscured the near synchronism of the North and the South Indian sexagenary cycle systems for the third decade of the 11th century CE. This in turn obscured the basic problematic of the foundation of Kālacakra chronology.

In 1973 Dieter Schuh published his valuable *Untersuchungen zur Geschichte der tibetischen Kalenderrechnung*. Schuh says: “Zur Frage nach der Entstehungszeit des *Kālacakratantra* ergeben sich aus den Kalenderrechnungen (Tantra I, 27) drei Daten, nämlich das Jahr 1027 n. Chr. als Anfang der Jahreszählung, das Jahr 806 n. Chr. als Epoche der Kalenderrechnungen und das Jahr 624 n. Chr. (richtig wäre 622) als Beginn der mohammedanischen Zeitzählung” (Schuh 1973: 20). Again, “Die Epoche für die Kalkulationen des *Kālacakratantra* bildet der Beginn des Monats *caitra* des Jahres 806 n. Chr.” (Schuh 1973: 100; cf. 102, 104–5, 118, 121, 131–32; cf. also Grönbold 1991: 393 ff.). Schuh simply asserts rather than demonstrates these dates; like Csoma, he follows the position held by Tibetan scholars such as Bu ston and sDe srid Sangs rgyas rgya mtsho. As we have demonstrated above, regardless of whether one assumes the Kālacakra follows the North Indian or the South Indian system of the sexagenary cycle, this reckoning of the epoch is incorrect: it is based on the same mistaken assumption that Bu ston made, i.e. that *mleccha* 403 corresponds to the initial year rather than the last year of the sexagenary cycle.

In 1987 I raised the issue of the ultimate origin of *mleccha* 403 in Kālacakra chronology, and argued that since it must derive from a Muslim source it should be reckoned in the Hijra era and would thus correspond to 1012/13 CE (Newman 1987a: 100, n. 24). Given the information presented in this essay, such a position is untenable.

The most recent contribution to the study of Kālacakra chronology appears in the introduction to Giacomella Orofino’s edition of the *Sekoddeśa* (Orofino 1994). This work, together with the other excellent publications of Orofino and Raniero Gnoli, marks an entirely new phase in Western study of the Kālacakra: the following remarks are in no way intended to disparage these superb studies.

Following Vogel *et al.*, Orofino assumes it is proven that the Kālacakra follows the South Indian version of the sexagenary cycle, and that the first year of the cycle corresponds to 1027 CE. However, Orofino recognizes that *mleccha* 403 is the last year of the preceding sexagenary cycle. Thus, she says, *mleccha* 403 corresponds to 1026 CE, and “[t]hus we can assume that the astronomical era of the Kālacakra *laghukaraṇam*

corresponds to A.D. 805 of the Gregorian calendar” (Orofino 1994: 15–16).

However, Orofino’s demonstration of her findings is flawed. She states: “As proof of the fact that the *dhruvaka* [i.e., the epoch of Kalkin Aja] corresponds to A.D. 805 we can use the Teliṅga rule of conversion from the Indian to the Gregorian calendar, in fact it has been demonstrated [i.e., by Vogel] that the Kālacakra tradition adopted the sixty-year Jupiter cycle following the South Indian Teliṅga (Telugu) calculation. The Teliṅga rule runs as follows: ‘To the *expired* kaliyuga year (Christian year + 3102–1) add 13, divided by 60; the remainder gives the number of the current year of the Jupiter cycle, counting from *Prabhava*.’ (cf. Vogel 1964: 234, fn. 30) i.e. = $805 + 3102 - 1 + 13 = 3919 \div 60 = 65$ (remainder 19)” (Orofino 1994: 16, n. 30).

As we have seen, Vogel’s demonstration that the Kālacakra follows the South Indian system of the sexagenary cycle is problematic. A more serious problem in Orofino’s proof lies in her assertion that the *Kālacakrānusāri-gaṇita* “asserts that the *dhruvaka* [i.e., Kalkin Aja’s epoch] corresponds to the 19th year of the Jupiter cycle, which falls 41 years before the end of the sexagenary cycle” (Orofino 1994: 16). In fact, Orofino has misconstrued a portion of the text which reads as follows: “Also, one school thinks (*phyogs gcig gi nram par rtog pa*) that the epoch for the first year [i.e., the year of the Tathāgata] is 41; i.e., they hold that nineteen years had expired within the first sexagenary cycle, and that 41 years remain when sixty has been reduced [by nineteen].” MS 1b2–3: [*pu*]naḥ śaṣṭihṛte ’vaśiṣṭam varṣa 41 prathamāśaṣṭisamvatsaramadhye ekonaviṁśativarṣe gate kṛtam iti [*ekapaksavikalpaṃ prathamavarṣadhru*] vakam 41 (MS is damaged; missing portions translated from the Tibetan). P 266b4–5: *yang drug cus phri ba’i lhag ma’i lo 41 dang por lo drug cu’i nang nas lo bcu dgu ma ’das par* [sic! read: *’das par*] *byas so zhes pa ni phyogs gcig gi nram par rtog pa ste dang po’i lo’i dhru ba ka 41*. In other words, this passage discusses one view on the epoch of the Tathāgata, i.e., the year of the Tathāgata during the very first sexagenary cycle of the Kālacakra chronology: it is only indirectly related to the issue of Kalkin Aja’s epoch.

SUMMATION AND CONCLUSIONS

Having examined the history of this problem from the primary Indian Kālacakra texts up to the most recent Western studies, we are prepared to offer some conclusions. If we restrict ourselves to the calendrical

calculations of the primary Kālacakra texts – the *Śrī Kālacakra* and the *Vimalaprabhā* – we must reckon the *mleccha* year 403 in such a way that it agrees with Anno Hegirae 415, which corresponds to 1024/25 CE. Given the statement in the *Vimalaprabhā* that the *mleccha* is Muḥammad, and the copious, accurate information on Islam found elsewhere in the early Kālacakra literature, this fact carries much weight.

Complications arise when we introduce the Indian sexagenary cycle into this chronology. As we have seen, regardless of which sexagenary cycle system we utilize, *mleccha* 403 must correspond to *kṣaya*, the sixtieth and last year of the cycle. Varāhamihira's North Indian formula for reckoning sexagenary cycle years produces a result that concurs with the above reckoning of *mleccha* 403; i.e., 415 AH/1024–25 CE was a *kṣaya* year in the North Indian version of the sexagenary cycle (Pillai 1922: 50–51).

The South Indian sexagenary cycle system does not agree with the above reckoning. In the South Indian system *kṣaya* corresponds to 1026/27 CE and 417 AH (Pillai 1922: 54–55). If we apply 417 AH to the formulas given in *Śrī Kālacakra* 1.27 and *Vimalaprabhā* 1.9.27, we arrive at 405 for the corresponding *mleccha* year. Nevertheless, the entire Indo-Tibetan Kālacakra tradition subsequent to Abhayākaragupta (with the problematic exception of the *Kālacakrānusāri-gaṇita*) presupposes the South Indian system.

Thus, we are left with a dilemma. Either (1) the Kālacakra *laghukaraṇa* presupposes a correct lunisolar calendar reckoning of the year AH, and the North Indian system of the sexagenary cycle, in which case the subsequent Indo-Tibetan Kālacakra tradition following Abhayākaragupta erroneously utilized the South Indian version of the sexagenary cycle; or (2) the *laghukaraṇa* presupposes an erroneous lunisolar calendar reckoning of the year AH, and the South Indian system of the sexagenary cycle. Given the current state of our knowledge there does not seem to be a definitive resolution of this dilemma. However, it appears to be more likely that the *laghukaraṇa* itself is not in error, and that the subsequent tradition mistakenly imported the South Indian sexagenary cycle into Kālacakra chronology.

This hypothesis is based on the following considerations: The Kālacakra *laghukaraṇa*, as its name indicates, is a mere abbreviated handbook on astronomy. *Vimalaprabhā* 1.9.86 explains that Buddhists wishing to fully understand astronomy must refer to the *siddhāntas*: VP (S) U 118.13–19: *etat siddhānte rāhor vrajanādikaṃ vistareṇa bāhyajñānārthaṃ veditavyam | asmin tanre laghuhetuto mañjuśrīyā na prakāśitam | atra yad adhyātmopayogyam tad*

evoktaṃ saṃkṣepata iti | . . . tasmād bauddhair bāhyaparijñānārthaṃ brahmasūryayamanakaromakasiddhāntaṃ jñātavyam iti bhagavato niyamaḥ | (see Newman 1987: 181–82). As noted above, the *Vimalaprabhā* states that the expired sexagenary cycle year is “established in all the other *karaṇas*” (see note 3). I believe this indicates that users of the Kālacakra *laghukaraṇa* are expected to consult the *karaṇas* associated with the *Brahma-*, *Sūrya-*, and other *siddhāntas* for formulas on calculating the sexagenary cycle year, which in turn implies that it presupposes the North Indian system of reckoning sexagenary cycle years.

Thus we put forward the following hypothetical development of Indo-Tibetan interpretations of the epoch of the Kālacakra *laghukaraṇa*:

- 1) Circa 1024 CE the author(s) of the *Śrī Kālacakra* and the *Vimalaprabhā* established the epoch in the Kālacakra *laghukaraṇa* on the basis of a correlation between a solar calendar reckoning of 415 AH – *mleccha* 403 – and *kṣaya*, the current final year of the North Indian version of the sexagenary cycle.
- 2) Around the end of the 11th century CE Abhayākaragupta reset the epoch, tacitly presupposing the South Indian version of the sexagenary cycle.
- 3) In 1125 CE Dānaśrīmitra explicitly utilized the South Indian formula for reckoning his expired sexagenary cycle year.
- 4) In 1169 CE the author of the *Kālacakrānusāri-gaṇita* produced an incoherent hybrid in which a variant North Indian formula is introduced into a tradition that followed the South Indian version of the sexagenary cycle.
- 5) In 1326 CE Bu ston Rin chen grub reckoned his current sexagenary cycle year tacitly presupposing the South Indian version of the sexagenary cycle. This interpretation of the epoch became normative for the subsequent Tibetan astronomical tradition.

DATING THE EARLY KĀLACAKRA LITERATURE

Regardless of whether we reckon *mleccha* 403 as corresponding to 1024/25 CE or to 1026/27 CE, the appearance of this year in the Kālacakra *laghukaraṇa* is crucial for dating the *Śrī Kālacakra*, the *Vimalaprabhā*, and the rest of the early Kālacakra literature. Orofino says that the appearance of *mleccha* 403 in the *Śrī Kālacakra* and the *Vimalaprabhā* “leads us to infer that the period of composition of [the Kālacakra] literature in India corresponds to the sexagenary cycle from A.D. 967 to A.D. 1026” (Orofino 1994: 16; cf. Gnoli and Orofino 1994:

61–62). This is in effect a modified version of the position mentioned above that was held by sDe srid Sangs rgyas rgya mtsho (and other Tibetan scholars) and Helmut Hoffmann.

However, this interpretation is definitely mistaken. Again, the *Vimalaprabhā* states, “the epoch is reset at the end of the sexagenary cycle.” Therefore, *mleccha* 403, the last year of the sexagenary cycle corresponding to the latter half of the 10th century and the beginning of the 11th century CE, was established to set the epoch for calculations to be carried out during the *subsequent* sexagenary cycle, the sexagenary cycle corresponding to the middle of the 11th century CE, just as Abhayākaragupta used the *mleccha* year 463 to reset the epoch for calculations to be carried out during the sexagenary cycle corresponding to the end of the 11th century and the first half of the 12th century CE, and the *Kālacakrānusāri-gaṇita* used the *mleccha* year 523 to reset the epoch for calculations to be carried out during the sexagenary cycle corresponding to the second half of the 12th century and the beginning of the 13th century CE. In other words, *mleccha* 403 only became chronologically relevant beginning in the third decade of the 11th century CE.

The appearance of the *mleccha* year 403 in *Śrī Kālacakra* 1.27a and *Vimalaprabhā* 1.9.27a conclusively demonstrates that these passages could not have been composed before the third decade of the 11th century CE.⁹ Since the *Śrī Kālacakra*, the *Vimalaprabhā*, and most of the other revealed texts of the Kālacakra corpus are cited by the renowned Indian Kālacakra master Nāropā, who probably died ca. 1040 CE,¹⁰ we are quite safe in assuming that the basic texts of the Kālacakra tradition originated during the early decades of the 11th century CE, and we know with certainty that the *Śrī Kālacakra* and the *Vimalaprabhā* were completed between 1025 and ca. 1040 CE.

This firm dating of the primary texts of the Kālacakra system enables us to fix a *terminus ante quem* for the numerous works these texts refer to, and a *terminus post quem* for works that refer to the Kālacakra. Also, the Kālacakra system reflects a distinct historical milieu. Dating the early Indian Kālacakra literature enables us to correctly interpret the historical references found in these texts and, most important, provides us with a chronological basis upon which we can begin to understand the mentality that produced this remarkable system of mysticism.

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APPENDIX: THE KĀLACAKRA ṢAṢṬISAMVATSARA

In using Vogel's helpful table of year-names of the Indo-Tibetan sexagenary cycle (Vogel 1964: 225–26) it became apparent that, as Vogel noted: “In a few cases the Sanskrit terms corresponding to the Tibetan [as given by Csoma and Das] do not agree with those ordinarily used in Indian chronology . . .” In fact the Indian lists of the sixty names appear to reflect different traditions that vary somewhat in the forms of the names, and the Tibetan list is a translation of a sub-tradition specific to the Kalacakra.

In Bu ston's annotations to VP (T) he provides a list of the sixty names drawn from “*phyag rdor*,” i.e., “Vajrapāṇi,” which is his abbreviation for the text titled *Laghutantraṭīkā* in its Sanskrit manuscripts. The *Laghutantraṭīkā*, which claims itself to be a composition of the bodhisattva Vajrapāṇi, is a commentary on the opening verses of the *Śrī Laghusaṃvara*, a Cakrasaṃvara *laghutantra*. The *Laghutantraṭīkā*, the *Vimalaprabhā*, and the *Hevajrapīṇḍārthaṭīkā* make up “The Bodhisattva Corpus” (*byang chub sems dpa'i skor*), also known as “The Corpus of Three Bodhisattva Commentaries” (*sems 'grel skor gsum*), which is among the earliest literary artifacts of the Kalacakra tradition (see Newman 1987: 76–77 et seq.).

Since the Tibetan tradition of chronology is largely derived from the Kalacakra, and since the Tibetans often give dates using the Sanskrit and/or the Tibetan of the sixty year-names, I thought it worthwhile to provide a table of the sexagenary cycle names based on the *Laghutantraṭīkā*. Minor variation in spelling aside, significant differences with the forms of the names given in Vogel's table occur in nos. 4, 13–18, 20, 32, 34, 46, 53, 58. An edition of the *Laghutantraṭīkā* passage containing the sixty names follows the table.

no.	Sanskrit	Tibetan	no.	Sanskrit	Tibetan
1	prabhava	rab byung	31	hemalamba	gser 'phyang
2	vibhava	rnam byung	32	vilambin	rnam 'phyang
3	śukla	dkar po	33	vikārin	sgyur byed ⁶
4	pramāda	rab myos	34	śārvarī	kun ldan
5	prajāpati	skye bdag ¹	35	plava	'phar [ba] ⁷
6	aṅgiras	aṅgi ra	36	śubhakṛt	dge byed
7	śrīmukha	dpal gdong ²	37	śobhana	mdzes byed
8	bhava	dngos po	38	krodhī	khro mo
9	yuvan	na tshod ldan	39	viśvāvasu	sna tshogs dbyig
10	dhātṛ	'dzin byed	40	parābhava	zil gnon
11	iśvara	dbang phyug	41	plavaṅga	spre'u
12	bahudhānya	'bru mang po	42	kīlaka	phur bu
13	pramādin	myos ldan	43	saumya	zhi ba
14	vikrama	dpa' bo	44	sādhāraṇa	thun mong
15	vṛṣa	khyu mchog	45	virodhakṛt	'gal byed
16	citrabhānu	sna tshogs nyi ma	46	paridhavin	yongs 'dzin
17	svabhānu	nyi [ma]	47	pramādin	bag med can ⁸
18	taraṇa	sgrol byed	48	ananda	kun dga'
19	pārthiva	sa skyong ³	49	rakṣasa	srin bu
20	avyaya	mi zad ⁴	50	anala	me

no.	Sanskrit	Tibetan	no.	Sanskrit	Tibetan
21	sarvajit	thams cad 'dul	51	piṅgala	dmar ser can
22	sarvadhārin	kun 'dzin	52	kāladūtī	dus kyi pho nya
23	virodhin	'gal ba	53	siddhārtha	don grub
24	vikṛta	rnam 'gyur	54	raudra	drag [po]
25	khara	bong bu ⁵	55	durmati	blo ngan
26	nandana	dga' ba	56	dundubhi	rnga chen
27	vijaya	rnam rgyal	57	rudhīrodgārīn	khrag skyug pa ⁹
28	jaya	rgyal ba	58	raktakṣī	mig dmar
29	manmatha	myos byed	59	krodhana	khro bo
30	durmukha	gdong ngan	60	kṣaya	zad pa

Sources for the Tibetan: (1) VP (T) 480.5–6; (2) P 2117 bsTan 'gyur rGyud 'grel CHA15b1–4; (3) D 1402 bsTan 'gyur rGyud 'grel BA 90a6–90b2. Tib. v.l.: 1) VP (T): skyes bdag. 2) VP (T): dpal sen; P: dpal sdong. 3) D: sa sbyong. 4) VP (T) & D: mi bzad. 5) VP (T) & P: bung bu. 6) VP (T): sbyar byed. 7) D: 'bar ba; P: *ambiguous*. 8) D: bag yod. 9) D: khrag skyugs pa.

Laghutantraṭīkā

tathā

prabhavo vibhavaḥ śuklaḥ pramādo 'tha prajāpati¹ |
 aṅgirāḥ² śrīmukho bhāvo yuvā dhātā tathaiva ca || [1]
 īśvaro bahudhānyaś ca pramādī³ vikramo vṛṣaḥ |
 citrabhānuḥ svabhānuś⁴ ca tāraṇaḥ pārthivo 'vyayaḥ⁵ || [2]
 sarvajit sarvadhārī ca virodhī vikṛtaḥ kharo⁶ |
 nandano vijayaś caiva jayo manmathadurmukhau || [3]
 hemalambo vilambī ca vikārī⁷ śārvarī⁸ plavaḥ |
 śubhakṛt śobhanaḥ krodhī viśvāvasuḥ parābhavaḥ || [4]
 plavaṅgaḥ⁹ kīlakaḥ¹⁰ saumyaḥ sādharāṇo virodhakṛt |
 paridhāvī pramādī ca ānando rākṣaso 'nalaḥ || [5]
 piṅgalaḥ kaladūtī ca siddhārtho raudradurmatau¹¹ |
 dundubhi¹² rudhīrodgārī raktakṣī krodhanaḥ kṣayaḥ || [6]
 iti ṣaṣṭisamvatsaraḥ ||

Sources: MS A 6b2–4 [Kesar Library MS no. 225; Nepal-German Manuscript Preservation Project reel no. C 25/6; palmleaf, *gomola* script]; MS B 10b8–11a3 [National Archives Nepal MS no. 5–108; Nepal-German Manuscript Preservation Project reel no. B 112/14; paper, *devanāgarī* script; appears to be a copy of A]. N.B.: MSS insert the numeral 3 following every third name to facilitate the list's use in a ritual described subsequently in the text. v.l.: 1) B: prajāpatiḥ. 2) B: aṅgirā. 3) B: pramādī. 4) B: svabhānuś. 5) B: pārthivavyayaḥ. 6) B: kharāḥ. 7) A: vikārī. 8) A: śārvarī, *emendation*: śā-. 9) A: pravaṅgaḥ; B: pravahaḥ. 10) B: kilakaḥ. 11) A & B: -durmatī; B *emendation*: -durmatau. 12) A: dundubhī; B: indubhī.

NOTES

* I am indebted to Mr. David Reigle, Dr. Michael Sweet, Prof. Cynthia Talbot and Dr. Beth Newman for their assistance with this paper; any errors are of course my own.

¹ According to the Kālacakra tradition, the *Śrī Kālacakra* – the Kālacakra *laghutantra*, is a condensation of the *Paramādibuddha* – the Kālacakra *mūlatantra*. Thus the *Śrī Kālacakra's* *laghukaraṇa* is held to be an abridgement of the Kālacakra astronomical *siddhānta* contained in the *Paramādibuddha*. Substantial excerpts from the *Paramādibuddha siddhānta* are cited in the *Vimalaprabhā's* commentary on the *Śrī Kālacakra*. Although it would take us too far afield to discuss this hypothesis here, I believe that the *Paramādibuddha* is in fact an ad hoc creation invented to legitimate the Kālacakra system as *buddhavacanam*, and that all of its fragments and excerpts that have come down to us were composed during the early decades of the 11th century, like the *Śrī Kālacakra* and the *Vimalaprabhā*.

² *vahnau khe 'bdhau; me mkha' rgya mtsho*. “Fire (3) sky (0) ocean (4)” is written in “number symbols” (Tib. *grangs brda*). Pingree (1981: 1) gives the Sanskrit as *bhūtasāṅkhyā*, and explains that they are “common objects that appear or are understood to appear in the world in fixed quantities [used] as synonyms for those quantities.” In combination the symbols are read right-to-left; thus, the above example represents the number 403.

³ For this sentence VP (T), with Bu ston's annotations given in brackets, reads as follows: “That very [*prabhava*] year is well known (*prasiddham; rab tu grags pa*) [as the first of the years] in all the other *karaṇas*, just as [each] Sunday [is known as the first of the days of the week].” I believe the Tibetan translation and Bu ston's annotations misconstrue the intent here. The *Vimalaprabhā* is not saying that *prabhava* is the first year of the sexagenary cycle, which is indeed “well-known” (*rab tu grags pa*); rather, it is referring the reader to the other *karaṇas*, which provide formulas for “establishing” (*prasiddham; rab tu grub pa*) any given expired sexagenary cycle year that are omitted from the Kālacakra *laghukaraṇa*. I believe this interpretation makes better sense, and it is certainly supported by the *Vimalaprabhā's* use of *prasiddham* throughout the rest of this passage where, as the Tibetan translation *rab tu grub pa* indicates, it clearly refers to the mathematical “establishment” of a year.

⁴ This paper began its life as a footnote in a much longer study titled “Islam in the Kalacakra Tantra” (Newman, *forthcoming*), which presents all of the *realia* concerning Islam found in the early Indian Kālacakra literature. However, to provide some context for what follows we must briefly address the question of why the Hijra era plays a role in Kālacakra chronology. The Kālacakra borrowed and adapted the Hindu myth of the Kalki *avatāra* of Viṣṇu in the creation of its own apocalyptic eschatology. In the myth of Kalki the appearance of marauding *mlecchas* (“barbarians”) is a definitive symptom of the *kaliyuga*, the final age of degeneration, and the author of the Kālacakra mythologized the historical incursion of Islam in South Asia by identifying the Muslim invaders as the *mlecchas* of the puranic myth of Kalki. Thus, the Kālacakra incorporated Muslim chronology into its own chronology in order to provide a real world frame of reference for its mythic eschatological vision: the years that have expired in the era of Muḥammad indicate the inexorable process of degeneration that will only be reversed by the Buddhist apocalypse at the end of the age. For more on this see Newman 1995 and *forthcoming*.

⁵ On Abhayakaragupta's dates see Newman 1987: 92–93; Bühnemann 1992.

⁶ Here P annotates the Tibetan translation as follows: *'di yin nam brtag*; “It is questionable whether this [formula for calculating the sexagenary cycle year] is correct.” Thus it is clear that the translator or some other Tibetan scholar recognized the problems inherent in utilizing the *Kālacakrānusāri-gaṇita's* formula.

⁷ I suspect this error is related to the misconstrual discussed in note 3.

⁸ Vogel was misled by the fact that the North Indian system counts *vijaya*, year twenty-seven of the cycle, as the first year of the *kaliyuga*, whereas the South Indian system holds that the *kaliyuga* begins with *prabhava*. Thus, although the two systems differ on the sexagenary cycle name of the first year of the *yuga*, they agree that *prabhava* is the initial year of the sexagenary cycle itself.

⁹ Schuh notes: “Demnach kann das *Kālacakratāntra* in der vorliegenden Fassung nicht vor 1026 entstanden sein, wobei diese Fassung wenigstens zum Teil auf einer Textvorlage beruhen muß, die um 806 entstanden ist” (Schuh 1973: 20). The finer points of reckoning these years aside, I agree with Schuh that *mleccha* 403 establishes a *terminus post quem* for *Śrī Kālacakra* 1.27 and *Vimalaprabhā* 1.9.27. However, the use of Kalkin Aja’s era in the *Kālacakra laḡhukaraṇa* raises even more subtle and complex questions. For example, in the passage edited and translated at the beginning of this essay, “Kalkin Puṇḍarīka” – the author of the *Vimalaprabhā* – refers to Kalkin Aja’s correction of the *Kālacakra laḡhukaraṇa* even though Aja supposedly lived hundreds of years *after* Puṇḍarīka’s time (see, e.g., Grönbold 1991: 394–95). Obviously, as is the case with all of the Kalkins of Sambhala, Aja is a mythological figure invented as part of the Kalacakra’s myth of self-legitimation. This being so, we cannot accept the traditional account of the development of the *Kālacakra* astronomy at face value. I suspect that the author of the *Kālacakra laḡhukaraṇa* artificially placed the initial year of its era in the early 9th century CE for some astronomical reason, but resolution of this issue awaits a thorough scientific study of the *Kālacakra* astronomy.

¹⁰ On *Śrī Nāropā*’s nirvana, see Wylie 1982. I follow Wylie’s argument in dating *Nāropā*’s death, but note that his main source is Alaka Chattopadhyaya, *Atīśa and Tibet*. For additional important Tibetan sources that also place *Nāropā*’s death shortly before *Atīśa*’s departure for Tibet, see Eimer 1979: 172–74; dPa’ bo gTsong lag phreng ba 1545–64: 673. Also, Wylie concludes: “Let the historical record show that *Nāropā* was born in A.D. 956 and died in A.D. 1040 . . .” (Wylie 1982: 691). Although Wylie has made a strong case for dating *Nāropā*’s death at ca. 1040 CE, the evidence in support of the birth date is weak. As a rule we must be very skeptical of the miraculously precise dates late Tibetan sources provide for events that occurred hundreds of years earlier in India. These dates are always given in the Tibetan element-animal sexagenary cycle which was never used in India, and which only became current in Tibet in the 13th century. In other words, we cannot rely too heavily on Tibetan reconstructions of the chronology of Indian Buddhism until we thoroughly understand the presuppositions, methods, and source-materials of the Tibetan historians and hagiographers.

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