

Comments on Schuh's ZAS "review"

In the 37/2008 edition of the journal ZAS (Zentralasiatische Studien des Seminars für Sprach- und Kulturwissenschaft der Universität Bonn 37/2008), Dieter Schuh has written criticising three publications. These are:

"Tibetan Calendar Mathematics", a paper by Svante Janson.

"Calendrical Calculations", by Nachum Dershowitz and Edward M. Reingold.

"Kālacakra and the Tibetan Calendar", by myself.

Much of this review consists of Schuh putting forward his own explanation of certain straightforward points regarding Tibetan astronomy and calendar making. The following notes address the main criticisms that he makes.

One of the first of those comments is to state that "Therefore a number of statements in Janson's article demand further clarification."

Let's look at just a couple of these (12) points that Schuh quotes:

p.214. "Janson, p. 9: 'In other words, 804 (lunar) months = 65 (solar) years.... 67 (lunar) month = 65 solar month.'"

But then later, in his own discussion of the month calculations, Schuh states:

"The basic relation is that the period of 67 lunar months and 65 solar months are equal."

It is difficult to see what difference there is between these comments, and why Janson's comment demands "further clarification", when it actually contains more information than Schuh's sentence.

Another point:

"Janson, p. 3: 'The *Julian day number* (which we abbreviate by JD) for a given day is the number of days that have elapsed since the epoch 1 January 4713 BC (Julian)...'"

Again, what might possibly be objectionable here? It is a factually correct statement. The use of the Julian day number and the Julian date – there is a difference between the two – is quite standard in astronomical and calendrical calculations. Schuh must be aware of this, and yet he gratuitously claims this comment needs "further clarification".

I would certainly phrase some of the other ten points that Schuh lists differently from Janson, but I would not disagree with their substance. The implication given is that they are wrong or misleading, but they are not.

p.215. Schuh criticises the use of the term zodiacal month:

"The time needed by the mean sun to pass through one of the twelve traditional constellations of the zodiac (the twelve *Khyim*) is called *Khyim-zla*, which Janson calls a **zodiacal month**. But since the length of one *Khyim-zla* is equal to what we call usually a solar month, we should use this term solar month for the translation of the Tibetan word *khyim-zla*."

There is another term that should be considered here, and that is *khyim-zhag*, for which I favour zodiacal day. The point of both these terms is that they are periods of time based on the movement of the mean Sun through the signs of the zodiac (*khyim*). For this reason, zodiacal month is perfectly reasonable.

On its own, I rather like Schuh's translation of *nyin-zhag* as natural day, but in western astronomy a solar day is equal to the mean time interval between successive noons, equivalent to the Tibetan *nyin-zhag* – the mean time interval between successive daybreaks. Using Schuh's own logic above, therefore: "we should use this term" solar day. In the context of Tibetan calendars, it seems better to use the equivalent term in English, and possibly confusing to contrive a new one, no matter how appealing. If we use solar day for *nyin-zhag*, it makes sense to use zodiacal day for *khyim-zhag*, and it then becomes difficult to use solar month rather than zodiacal month for *khyim-zla*. The translations of these and other terms cannot be considered in isolation – they need to be considered together.

Schuh seems not to have done this. If we take his solar month for *khyim-zla*, it would be inconsistent not to use solar day for *khyim-zhag*, and that would be quite misleading.

Schuh complains about some of my terminology for my "limited knowledge of the structure of the Tibetan language." Apart from wondering how he can possibly know this, he fails to grasp the fact that two languages are important in translation, and I have tried to follow, where relevant, conventions in the use of English in astronomy and mathematics that match the Tibetan usage, rather than the etymology of the original Tibetan terms. For example, he does not like my use of the adjectives mean and true – but these are fair equivalents to the Tibetan terms and are the very words used in English when writing on such subjects. Schuh states that the meaning of the term *zla-dag* is the "correct number of (past) lunar months since the epoch", but this is not a better translation of *zla-dag* than "true month". If he is offering this phrase as an alternative translation, he seems to make here the elementary mistake of confusing translation with definition. His phrase is a correct definition, but would lead to very clumsy sentences if used as a translation.

If we take his phrase as a definition and mine as a translation, then does not the following sentence make perfect sense?

The true month is defined as the correct number of (past) lunar months since the epoch.

On the terms mean and true, in other aspects of Tibetan astronomy we find, for example with the solar longitude, that first a linear expression is used to find the mean longitude (*nyi-bar*), and then a correction is applied (a step-function that is an approximation to a trigonometric function) for the varying speed of the Sun, to determine the true longitude (*nyi-dag*). These are precisely the terms that would be used in equivalent calculations in English. If Schuh does not like these, then what on Earth does he propose? Typically, he does not say.

Bizarrely, he states "Accordingly *gza'-bar* is neither 'mean date' (Janson) nor 'mean weekday' (Henning), but the weekday and daytime for the end of a certain mean lunar day." Again, he confuses translation with definition.

Extraordinarily, we find him also writing elsewhere in this diatribe: "Tibetans calculate the mean weekday and the mean solar length for that moment." "Solar length" is a ridiculous term that would mean nothing in a conversation with an English-speaking astronomer, and is some strange equivalent to solar longitude. Anybody using such a term can have only the most primitive understanding of the terminology of astronomy, and is certainly in no position to criticise the language used by others.

Incidentally, this was no "slip of the keyboard" in just this isolated article: in a very ungrammatical August 2009 Wikipedia entry, Schuh wrote that the Kālacakra Tantra contains a "calender (sic) and descptions (sic) of the calculations to determin (sic) the length of the five planets". The five planets have just one "length" between them? This degree of sloppiness and contemptuous lack of care is difficult to believe.

Looking closely at his use of this term, Schuh states that this value is calculated for a particular "sgang", a term which he describes as Ch'i knots – this is a rather odd expression for the well-known major solar terms from Chinese astronomy. These are used in the Tibetan system to define the months. They are numbered, and if the mean Sun passes one of these points during a lunar month, this defines that particular month. Schuh is quite wrong to write that this "solar length" has to be calculated – it is a defining longitude and is simply looked up in a table! What does have to be calculated is the time when the mean Sun passes this point. Schuh seems very confused over this.

There are also instances in this piece where Schuh uses the terms "mean weekday" and the correct "mean solar longitude". It seems that he considers it quite proper that he use the term "mean weekday" for a moment in time such as the mean Sun passing a solar term, but this is not allowed for Janson and myself for the more commonly referenced time when the mean lunar day ends (*gza' bar*). Pure hypocrisy. To use his own words, both are uses which describe "the weekday and daytime for" certain mean events to occur – our use is the end of the mean lunar day and his the mean Sun passing a solar term.

Technical terminology in any language very often requires definition, and it is too often the case that people translate individual words in isolation rather than considering the relationships between terms, where relevant, such as with *khyim-zla*, above.

p.215. Another criticism:

"The **natural day** (*ñin-zag*) is defined by the Tibetans as the period from dawn to dawn. Janson's explanation that the beginning of the natural day takes place about 5 am local time is incomprehensible."

It should be Local Mean Solar Time (LMST). The notation used in calculations of sunrise and sunset times in the Tibetan tradition makes any other time impossible. Unfortunately, the Tibetan and original Indian texts do not spell this out as unambiguously as one would like – they did not until recently use the 24 hour clock, after all – but it is easily inferred from some Tibetan references. For example, Jamgon Kongtrul (*jam mgon kong sprul*) gives for the days when day and night are of equal length:

Sunrise: Rabbit (*vos*) 2,30,0

Sunset: Bird (*bya*) 2,30,0

This refers to the 12 double-hours, named according to the Chinese system. The first of these in the solar day is rabbit, and sunrise is given here as halfway through rabbit, after 2 nāḍī (*chu tshod*) and 30 pala (*chu srang*) – there are five nāḍī in each double-hour, and 60 pala in each nāḍī. This is one hour after the beginning of rabbit and the beginning of the solar day. Sunset is simply 12 hours later. As sunrise on those days is 6.00am LMST, it follows that mean daybreak, the beginning of rabbit, is at 5.00am LMST.

The image shows a portion of a handwritten Tibetan table. It has a grid structure with approximately 3 columns and 3 rows of text. The text is in a cursive script, likely Wylie or similar, and appears to be related to time or astronomy, as suggested by the surrounding text. The table is somewhat blurry and the text is dense.

The image on the left shows part of a table from the text "*rtsis kyi bstan bcos nyer mkho bum bzang las skar rtsis kyi lag len 'jug bder bsdebs pa legs bshad kun 'dus*" by "*'jam mgon kong sprul*". It clearly indicates a length of day and night each of 30 nāḍī, with the time for sunrise given as 2,30,0 within the double-hour of rabbit (*yos kyi chu tshod*

2,30,0 *bcas 'das mtshams nyi ma shar*) and sunset as 2,30,0 within bird (*bya'i chu tshod srang* 2,30,0 *bcas 'das mtshams nyi ma nub*). It is astonishing that Schuh seems unfamiliar with the contents of this important and readily available text. As with his other arguments, even if he has good reason to disagree with the timing of daybreak as 5.00am LMST (he calls it "incomprehensible"), he does not tell us either his reasoning or his time for daybreak.

As far as the Phugpa tradition and a modern Tibetan understanding is concerned, I have been told by Dr. Sonam Rinchen of the Tibetan Medical & Astrology Institute in Dharmshālā that the moment when the Sun casts the shortest shadow of a gnomon is half-way through the double-hour of horse – if horse therefore extends from 11.00am until 1.00pm, it follows that the solar day starts at 5.00am (horse is the fourth double-hour of the solar day). Sonam Rinchen referred me to a text entitled "*deng dus 'khor lo'i chu tshod dang rtsis kyi chu tshod lto sbyar blta bde'i re'u mig mthong shes ma*". This text was produced by the Tibetans in exile after they encountered western time keeping and had analysed the correspondence between it and their system. It clearly gives the start of the solar day, the start of the double-hour of rabbit, as 5.00am.

I would not personally consider this issue fully settled. Although the Tibetan usage certainly has the start of the solar day equivalent to 5.00am, I remain to be convinced that the original Kālacakra writers would have agreed with this. But that is another discussion.

In a footnote on p.215, Schuh simply states: "Janson's statement *"that is current at the beginning of the calendar day"* is incorrect." This is a footnote to Schuh's line: "... a Tibetan calendar month **normally** starts with the week day or natural day (*gza 'or ñin-zag*) in which the first lunar day (*tshes-zhag*) ends." Typically, Schuh does not state why Janson is wrong or explain his position.

Janson's full sentence is: "A calendar day is labelled by the lunar day that is current at

the beginning of the calendar day." Whether it is the first day of the month or another does not affect the discussion.

Schuh is again sloppy or confused here, because it is actually Janson's next sentence that is a little off the mark: "In other words, a lunar day gives its name (number and month) to the calendar day where the lunar day ends."

Schuh is correct that the month **normally** starts with the solar day during which the first lunar day ends. This is not always the case, because of the varying length of the lunar days – sometimes longer than solar days, sometimes shorter. It could be the case that lunar day 10, for example, starts just before a Wednesday solar day. The lunar date for the Wednesday will be 10, as lunar day 10 is "current at the beginning of the" Wednesday, as Janson states. However, if this lunar day is long, it may well not end until early on the Thursday – which will then be a duplicated 10th.

A couple of sentences later, Janson continues: "if no lunar day ends [during] a given calendar day, then that day gets the same name as the following day." I am not sure that "name" is the best style here, but the logic is perfectly correct. A lunar day can be current at the beginning of two successive solar days, which will then have the same lunar date.

Janson's second comment above ("In other words...") is not quite correct, because when a lunar day is short, you can have two lunar days end during the same solar day. One ending just after daybreak, and the next, shortly before the following daybreak. It is the first that will be current at the beginning of the solar day and will therefore supply the lunar date; the second will be omitted.

p.217. Schuh takes Janson to task for one comment about the numbering of the months in the Tibetan calendar: "Insofar Janson is mistaken, when he states (pp. 1,11) that the Tibetan calendar months are 'numbered by the corresponding solar months.'"

But Schuh then goes on to contradict himself by stating: "But in the system of counted months, the month *Tha-skar* is counted as the 9th *Hor-month*. When the sun passes the first zodiacal sign Aries, full moon roughly occurs in the lunar mansion *Nag*. But the month *Nag-zla* is counted as the 3rd *Hor-month*."

They are both saying that the definitions of the lunar months depend on the solar month, but Schuh seems to read into Janson's words something that is not there. Is he criticising Janson for apparently suggesting the solar months are numbered?

That is how it appears, and yet, on p.220, in a diagram of the "Months, seasons, solstices and equinoxes, based on the *Kālacakratantra*", Schuh labels the sign (zodiacal/solar month) of Aries (*lug*) as 0, Taurus (*glang*) as 1, etc. This enumeration is given in the *White Beryl (vaiḍūrya dkar po)*. In other Tibetan usage that I have seen – such as expressing the longitude of the Sun in daily information in almanacs – Aries is 1, Taurus 2, and so forth. Just what Janson is accused of here is not clearly expressed. This is the case with most of Schuh's criticism's – read superficially, they seem somewhat convincing, but when examined closely, they are in some sense or other incomplete or totally baseless. This calls his motivation seriously into question.

p.230. Schuh continues:

"Therefore, I personally think that it does not make much sense to develop formulas like $n = (Y - 1026) \bmod 60$ (Janson, p. 4) Here n gives the number of a year within a sixty years cycle and Y is the Gregorian year. Such numbers do not exist within the Tibetan system of time reckoning."

Janson's article is specifically intended to express the Tibetan calculations in modern terms; the use of such indices is obligatory in this computer age, and is anyway common in Tibetan calculations – although not the specific usage of numbering the 60-year cycle, so conveniently cherry-picked here for criticism by Schuh.

p.231. Schuh goes on to criticise Janson for his spelling of Tibetan words:

"Janson's treatment of Tibetan names and historical facts is completely unacceptable. For example, I do not see the slightest reason for the spelling Tsurphu instead of mTshur-phu."

Extreme language, yet again. Janson is not writing for people who understand Tibetan and its Wylie, or other, system of transcription. That system presents great difficulties for most people, and it is common to render Tibetan words in a more readable form. (In fact, the Tsurphu monastery itself, when writing in English, uses just this spelling.)

Schuh makes a similar comment about my own book, failing to note that towards the beginning I have written about the reasons for my use of "approximate representation of the pronunciation." I wrote: "However for the first occurrence of each such Tibetan word I give the Wylie transcription in brackets, together with the Sanskrit or Chinese equivalents where relevant."

Schuh presumably does not share my belief that a writer should do his best to help his readers, not baffle them with albeit correct spellings that they do not stand a chance of being able to pronounce. Schuh goes on to make fun of this in a most bizarre and childish manner, not worth repeating here. However, elsewhere in this extended advertisement for his own writings, Schuh mysteriously refers to a certain person as the "Dalai Lama". Could this possibly be a mistake, in place of the more correct "tā la'i bla ma"? He even writes at one point "Dalai Lama dGe-'dun grub-pa dpal bzañ-po", confusing the two styles.

Much of the above is really highly subjective criticism regarding style, but eventually (p.238) we come to a point where Schuh claims that my work contains "numerous mistakes". He does not mention these, except for one, and this is therefore worth looking at in detail. It is, after all, the only claim Schuh makes of a factual error in my work. (p.239)

This refers to the use of an epoch – a point in time for which such values as the mean solar longitude are given and from which calculations are made. Schuh takes issue with the following, and related, statements:

"This is the Julian day number for Friday 1st April 1927, the day I gave originally as the epoch of the 'Essence of the Kalki'."

The point here is to identify the day of the epoch, which is the day of the mean new Moon, usually at the beginning of the month of Caitra (the 3rd Tibetan month) in the relevant year.

So, if you were to take the epoch data from, say, the White Beryl (epoch Saturday 12th April 1687) and calculate forwards to the start of Caitra (*nag pa zla ba*, 3rd Hor-/Tibetan month) in

1927, where would you land up? The answer is Friday 1st April 1927. The calculation would proceed by taking the number of years elapsed, and then multiplying by 12. You would then add the number of months in the target year elapsed since Caitra – in our case, this is zero. A correction is then made for the fact there are not exactly 12 lunar months in a year. The formula is:

$$\text{True month} = m \times 1;2 + 0;15 (1,65)$$

This yields the number of mean lunar months that have elapsed since the White Beryl epoch. Multiplying by 30 produces the number of mean lunar days, and then another calculation converts this to solar days. This result – which first needs a simple check – can then be used, along with Julian dates, to convert to a western calendar. The process is straightforward and easily computerised.

I used this epoch in 1927 as it is very common in recent Tibetan texts and is the one used by one of my main sources ("Essence of the Kalkī" by Chenrab Norbu (*mkhyen rab nor bu*)). However important this date may be, it is unfortunately not the most convenient for demonstration purposes. There are two minor complications. One is that the Friday is the day of the mean new Moon, but the true new Moon actually fell on the Saturday, and so the first day of the new month was Sunday 3rd April.

Also, after an intercalary month, the next few months need an adjustment; to put it simply, you subtract one. This is easy to picture – a month has been doubled, and a correction is subsequently needed. There is no point in addressing here why just a few months down the line the correction is no longer needed.

The 12th Tibetan month of the previous year – just a couple of months before this epoch – was indeed intercalary and so the month I have just identified as starting on Sunday 3rd April, would, in a published calendar, be given as the second month, and not the third. That would start on 2nd May. It is this difference that Schuh attacks, but my discussion does not concern published dates for the year 1927, rather the identification of the epoch, and it is the first of these two that is considered the epoch, the mean new Moon on Friday 1st April. You arrive at this day when you calculate for the mean new Moon at the beginning of the third month from any previous epoch. That is what matters, and the subsequent adjustment for a published calendar is not involved – it would in fact rather muddy the waters. The epoch involves mean data, before any adjustments, corrections, and so forth.

If you calculate forwards from the 1927 epoch to, say, the month of Caitra (third month) in the year 1959, you will only get the correct answer (correct Gregorian date) if you take 1st April 1927 as the epoch, and not the following month. Let's see.

The image shows a section of a Tibetan calendar. At the top, there are several lines of handwritten Tibetan script. Below this is a table with three columns and five rows. The first row of the table contains the following Tibetan characters: ལྷན་པོ་ལྷན་པོ་, ལྷན་པོ་ལྷན་པོ་, ལྷན་པོ་. The subsequent rows contain numerical values in Tibetan script, such as ༠, ༡, ༢, ༣, ༤, ༥, ༦, ༧, ༨, ༩, ༡༠, ༡༡, ༡༢, ༡༣, ༡༤, ༡༥, ༡༦, ༡༧, ༡༨, ༡༩, ༢༠, ༢༡, ༢༢, ༢༣, ༢༤, ༢༥, ༢༦, ༢༧, ༢༨, ༢༩, ༣༠, ༣༡, ༣༢, ༣༣, ༣༤, ༣༥, ༣༦, ༣༧, ༣༨, ༣༩, ༤༠, ༤༡, ༤༢, ༤༣, ༤༤, ༤༥, ༤༦, ༤༧, ༤༨, ༤༩, ༥༠, ༥༡, ༥༢, ༥༣, ༥༤, ༥༥, ༥༦, ༥༧, ༥༨, ༥༩, ༦༠, ༦༡, ༦༢, ༦༣, ༦༤, ༦༥, ༦༦, ༦༧, ༦༨, ༦༩, ༧༠, ༧༡, ༧༢, ༧༣, ༧༤, ༧༥, ༧༦, ༧༧, ༧༨, ༧༩, ༨༠, ༨༡, ༨༢, ༨༣, ༨༤, ༨༥, ༨༦, ༨༧, ༨༨, ༨༩, ༩༠, ༩༡, ༩༢, ༩༣, ༩༤, ༩༥, ༩༦, ༩༧, ༩༨, ༩༩, ༡༠༠.

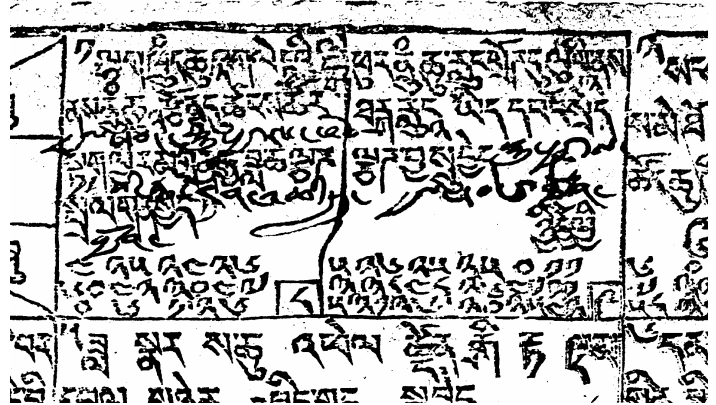
The proposed epoch of 1st April 1927 has Julian day 2424972.

The mean new Moon immediately before the third month in 1959 fell on Wednesday 8th April and has Julian day 2436667. This is one day after the true new Moon, and so is also the first day of the third month. We will also need the mean weekday.

The image on the left shows mean data for (the new Moon at the beginning of) the third Tibetan month in the Fire-Tiger year. This Tibetan year started in early February 1959.

This image is taken from the Phugpa almanac published in Lhasa – presumably the last before the Chinese fully colonised Tibet. In the cell at the bottom left, the column of numbers on the left gives the mean weekday: 4;4,38,0,624. 4 is the index for a Wednesday. Middle top in that cell is the true month and fractional part: 396;43. The other data in the cell give the anomaly and the mean solar longitude.

The image on the right shows data for two solar days in the third month from the same almanac. The first day is duplicated, and for this reason the data for two solar days are squashed into the space normally used for one day. This makes much of the writing difficult to read. Somebody has also written notes in the cells for both days.



However, the weekday of the first day is clearly given as a Wednesday, and the western date is given at the bottom right, with the simple number 8. The western month is only given when it changes, and a couple of pages later, the 24th of the third Tibetan month is given as 1st May. The first of the third month is therefore 8th April.

The number of years elapsed since the 1927 epoch is clearly $1959 - 1927 = 32$.

We now multiply by 12 and obtain 384.

We next apply the formula for the adjustment of the month count:

$$384 \times 1;2 + 0;55 = 396;43 \text{ (65)}$$

For the sake of clarity, this should be written out in full. Anybody can then check this with a pocket calculator. The calculation proceeds from the bottom line:

$$\begin{aligned} 384 \times 1 + 0 + 12 &= \mathbf{396} \\ 384 \times 2 + 55 \div 65 &= 12 \text{ rem. } \mathbf{43} \end{aligned}$$

The 12 is carried onto the line above. Both the true month and the fractional value are the same as given above in the Lhasa almanac.

We now convert to lunar days:

$$396 \times 30 = 11880$$

The conversion to solar days requires the following calculation:

$$11880 \times 11135 / 11312 = 11694 \text{ (to the nearest integer)}$$

This result may well require a correction – either the addition or subtraction of 1. But first, for the month count of 396, we need to derive the mean weekday for the target full Moon. The calculation is:

$$396 \times 1;31,50,0,480 + 6;57,53,2,20 (7,60,60,6,707) = 4;4,38,0,624$$

Written out in full, this becomes, again working from the bottom:

$$\begin{aligned} 396 \times 1 + 6 + 211 &= 613 \div 7 = 87 \text{ rem. } \mathbf{4} \\ 396 \times 31 + 57 + 331 &= 12664 \div 60 = 211 \text{ rem. } \mathbf{4} \\ 396 \times 50 + 53 + 45 &= 19898 \div 60 = 331 \text{ rem. } \mathbf{38} \\ 396 \times 0 + 2 + 268 &= 270 \div 6 = 45 \text{ rem. } \mathbf{0} \\ 396 \times 480 + 20 &= 190100 \div 707 = 268 \text{ rem. } \mathbf{624} \end{aligned}$$

The result is given by the remainders on each line, and is the same as given in the Lhasa almanac.

We need now to check if a correction is needed to the solar day count. The mean weekday value at the epoch was 6 (a Friday), and so 6 is added to 11,694, and then the result is divided by 7:

$$11694 + 6 = 11700 \div 7 = 1671 \text{ rem. } 3$$

This remainder now has to be compared with the mean weekday of the target new Moon that was determined earlier. This was 4, and as the remainder above is one less than this, we have to add one to our solar day count. This yields 11,695. All we need do now is add this to the Julian day for my proposed 1927 epoch:

$$2424972 + 11695 = 2436667$$

This is indeed the Julian day for the target new Moon in 1959, and so my 1927 epoch can only be correct.

Schuh must be aware of all this, and yet he writes: "This means that the Western equivalent for the 1st day of the 3rd *Hor-month* is definitely Monday 2nd May 1927, as shown in my tables. The equivalent for the 1st day of the 2nd *Hor-month* is Sunday 3rd April 1927, as also shown in my tables. The results of Henning's complicated calculations are absolutely wrong and his calculations are therefore unreliable."

This is gratuitous and dishonest nonsense. Schuh must know that it is not the first day of the month that matters, nor even the true new Moon day, but the mean new Moon. However, he repeatedly goes on about the first day of the month and completely fails to mention the all-important mean new Moon! Does he not know that an epoch is always a mean new Moon? He calls these simple integer calculations complicated. It may very well therefore be the case that my explanation of these calculations lacks some clarity, because he seems to have completely missed the point here. I hope my other readers are not so easily confused.

My calculations are most certainly not "absolutely wrong", and to state as such shows either very limited understanding or a deliberate mis-representation. Does Schuh disagree with me

that the 1st April 1927 is the 1927 epoch? Does he disagree that it is the mean new Moon when you calculate for the 3rd month in that year from any previous epoch, before making any intercalary adjustment? He very conveniently does not tell us his "correct" epoch for 1927 – an astounding omission given that my "calculations are absolutely wrong". Yet another incomplete and badly argued criticism.

As it happens, something like 20 years ago, I checked a good number of the results from my calendar calculations against Schuh's own tables. I found that they agreed. So, if my calculations are "absolutely wrong", then so must be his! As a set of 600 years-worth of Tibetan calendars of the Phugpa tradition have been published on my website for several years now, I presume Schuh has not bothered to check these, otherwise this logic would presumably not have escaped him.

I will end on one point that Schuh makes early on in his article, to which I take great exception. He writes, quoting me:

p.238. "Henning reports (p. XV), that he travelled frequently to Munich during the last twenty years to meet Günter Grönbold, director of the Bayerische Staatsbibliothek, Munich, who shared his interest in the Kālacakra. Henning writes: 'On the many occasions that I visited during the last 20 years, there was always a pile of recommended reading awaiting me.' Accordingly, Dr. Grönbold, who knew Winfried Petri personally, among others, and who was certainly familiar with Petri's publications, must have kept secret the whole well known scientific literature on Tibetan calendar and astronomy, although he provided 'a pile of recommended reading'. I really can't believe this. It is quite obvious that Henning lacks scholarly fidelity."

This is outrageous, and unbecoming of somebody supposedly following a professional academic discipline. Dr. Grönbold passed on to me much western material on the Tibetan calendar, including, if I remember correctly, material by Schuh himself. But the fact that many years later I do not quote one of Schuh's (justifiably) favourite authors suggests that I am lying? As a simple telephone call to Munich would have confirmed my comments, this suggests that Schuh's motives lie far distant from fact-checking and ascertaining the truth, making his writings unreliable.

In his last paragraph, he even attacks the whole English speaking world with the comment:

"The basic problem for the high-flying English-speaking community is the fact that they believe that nothing exists if it is not written in the English language."

If there is any logic at all to this blatantly untruthful statement (it is presented as a fact, not an opinion), it is presumably an attempt to explain why I did not reference Schuh's work in my own. I quoted in my book only authors that commented on or explained points that either helped my own understanding or could provide further additional reading for others. I made no attempt to clock up a long list of possibly impressive references, apart from just one artificial search that I made shortly before publication, and that concerned ... Dieter Schuh.

I had been asked to talk on the subject of the Tibetan calendar at S.O.A.S. in London. When I was introduced, Schuh's earlier work was mentioned, and we were told that he had made a comment to the effect that "When the Tibetans were doing their astronomy, they spent their time looking at their feet, rather than the stars." As this was a sentiment with which I

wholeheartedly agreed, I wanted to include this in a prominent position in my book. But, I did not know if this quote was attributed correctly or accurate in translation, and I was unable to find it in time...

E Henning, 17 October 2009.