

Work-Life Balance on a Planck Scale

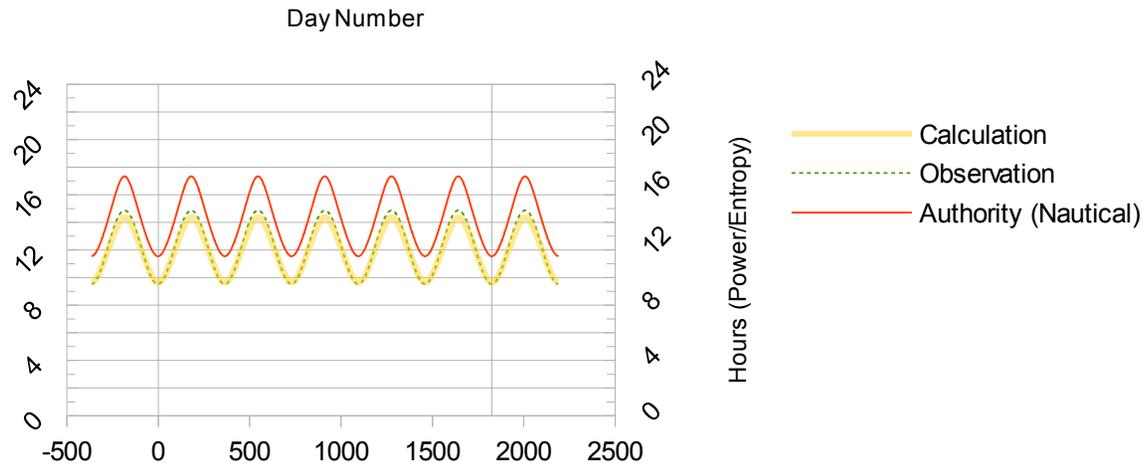
A Planck Scale is a quantized Energy scale. From a mathematical standpoint, it is a race among Physicists to take the square root of Pi. Gauss apparently proved this was possible, although only below average people and above average people can not understand how this could be so.

Planck Scales measure with step sizes so small that they can be averaged but they cannot be summed in small batches, like a Leap Year Cycle. That these steps cannot be summed means that they cannot increase the distance in time away from Absolute zero points. It does not mean these labeled points do not commemorate events which actually happened, but rather only that the sequence (Physicists call it phase), is preserved.

The days and years of a calendar are a Planck Scale with steps called seasons. In reality, there are two classes of "step" which alternate. Spring and Fall equinoctial steps and Summer and Winter are energy production/consumption critical point type steps. The step size varies with Latitude alone and the Axial Tilt of the Earth. Tidal friction is caused by the Moon, but is not a new source of energy for the earth. The phases of the year are ascertained going forward and coupled with Religious Holidays by their definition. Christmas (or Chanukah) is near the Winter Solstice and Easter (or Passover) is in the next Lunar Month following a full moon after the Spring Equinox. The information entropy of the message is zero. However, it also means that Holiday "Zero Days" are not explicitly required by the calculation.

Duration of Sunlight

Five Years (2014-2019 Nominal)



Sundials can measure the day and parts of the year, but they cannot measure the night. In the absence of a Zero Day or Zero Year, the “absolute” values for sunrise and sunset cannot be summed or integrated except by direct observation or theoretical calculation. Attempts by Authority to add the missing hours or change the calendar quarter step size with fractional days diverge from **both calculation and observation**. Civil, Nautical and Astronomical Time (Twilight) all increase the length of the day from both sides. They are not manifestations of “Job”, but rather “Power”, work per unit time (definition). The solution is exact along the meridians provided the rise, set and noon times may not at any time transit a meridian in any season – exactly what they do, of course, so we little people have to deal with it.

Work-Life Balance has to be achieved by a balancing of AM/PM activities and seasonal appropriate activities.

Authority and Authorities (Governments) are not very good at this sort of thing.

A fiat policy appropriate for Fall – going through Winter is inappropriate for Spring – going through Summer. In fact, the differences in seasons are in the math, not in the belief system or the Press Conferences. It is possible to visualize many moons or to postulate a multi-verse without looking the fool in public. Gauss and Planck hit on the solution way back – pretend to be looking for middle ground and let the baseline get longer (but not over step $\frac{1}{2}$ at a time, that is the year after year zero and the day after day zero). Max Planck even won a Nobel Prize in Average-ness, sorry, Physics in 1900.

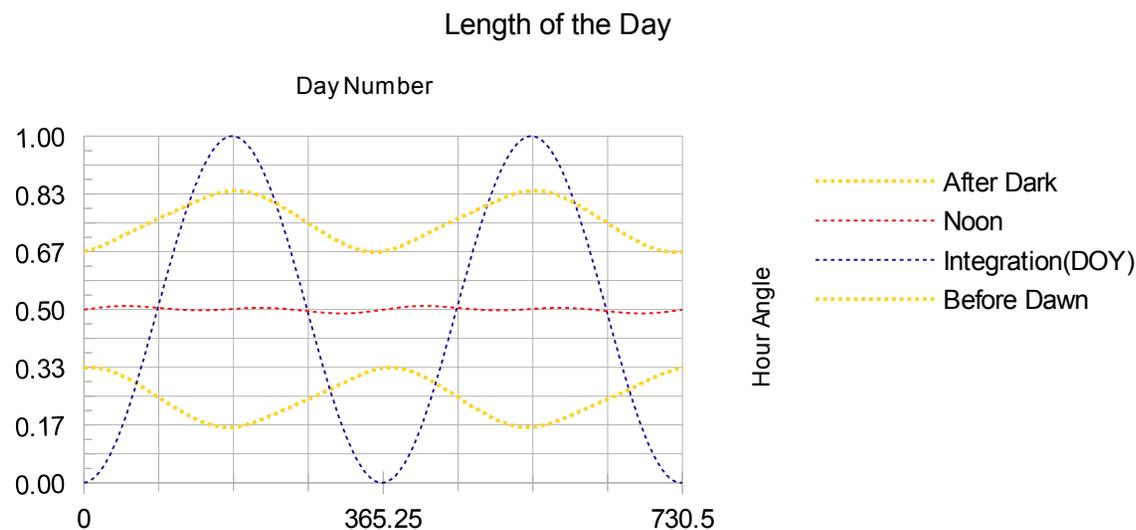
What makes Planck Scales dangerous final answers is that they have no absolute zero at the origin, by design. A “unit circle” has a diameter of $\pi/2$ and an area of $(\pi/2)^2$. When you say “Energy is conserved” you mean that Energy is being stored on the unit circle as quanta. It may well look like fuel, heat or a Salad Bar in real life. It is a short 8 minute trip for sunlight, but there is always uncertainty in the provenance of Energy – or Meta Data.

The “Year” consists of two states (Summer and Winter) and two transitional phases. The arrow of time (clock-wise) can be used to separate states because they clearly have different energy use profiles. The location of a Fall or Spring “Day”, whether you are at the top or bottom of a ramp tilting up or down, depends on the state which came before.

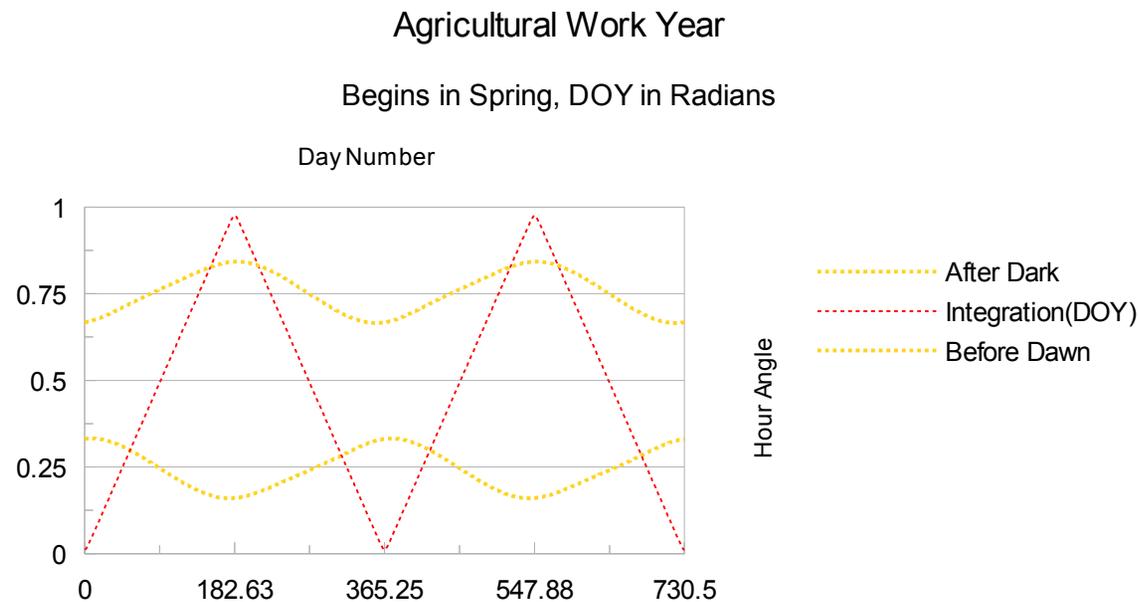
First, it would be good to sum Energy properly. That is, you can only sum that which has made it to your doorstep after many trips back and forth. Since the sun and unit circle are storage facilities in their own way, current inventory evaluations do not mean much unless you want them to mean something ... for example with Climate Change: Energy losses and gains have at least one balancing factor (Albedo). Want to see it ?

But second, when energy is conserved and the states (Winter and Summer) are distinct, then the appropriate trigonometry to use is the haversine in the direction of travel. This adds up (integrates) to two half steps into the future and four quarter steps back toward Absolute Zero. When Years have two, Days want two also.

Two Half-Years Forward, 4 Quarter-Years Back



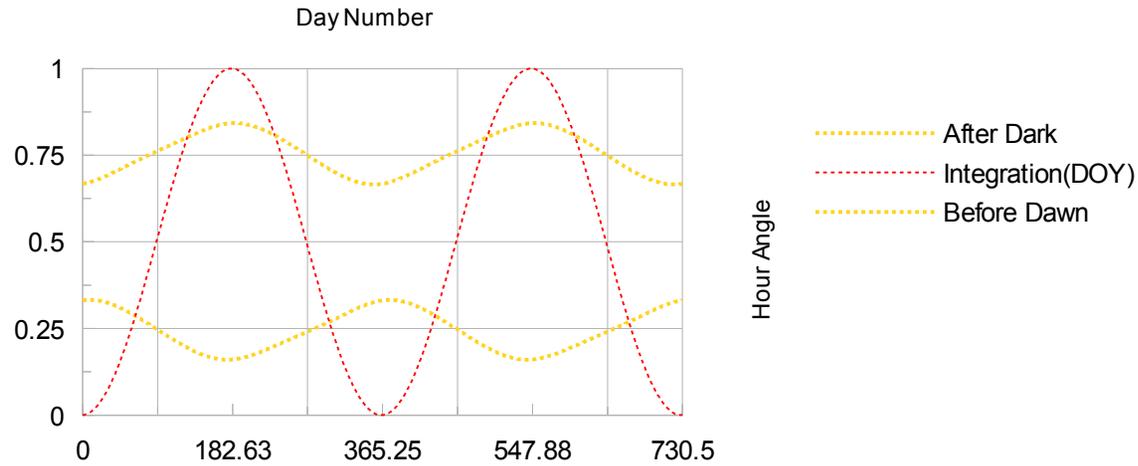
If you want to compute Albedo, use the Law of Cosines to measure the distance. The lines are straight, but you will notice that some Energy is missing from the top of the Triangle. To the good side, the tops (Summer) and the bottoms (Winter) are in the right place. To the bad side, the width at half-height actually means something for a Bell Curve, but not so much for a Triangle, although it is where it should be ...



Going back to haversine ...

Agricultural Work Year

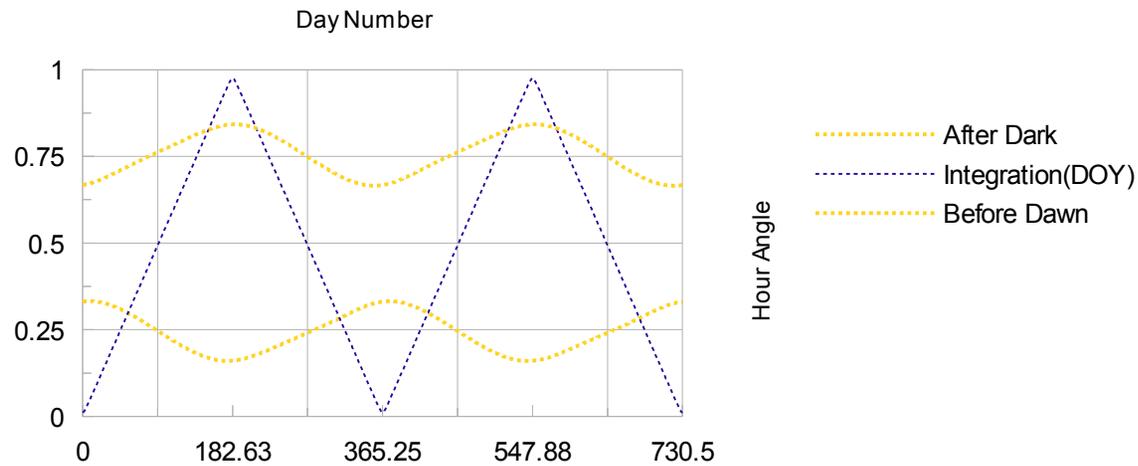
Begins in Spring, DOY in Radians



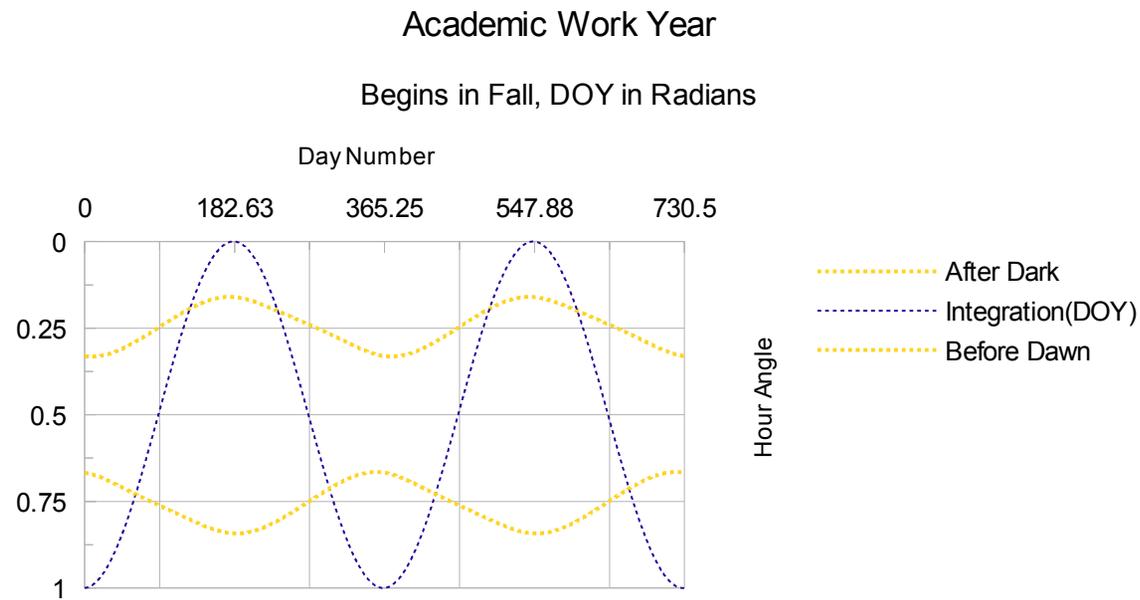
School Years have to “flip” the energy scale, because Winter is dark.

Academic Work Year

Begins in Fall, DOY in Radians



Oops. Albedo makes Winter and Summer equal. No scale flip is necessary. If you are getting Energy from bottomless storage then yes, you need to put Summer on top.



The Punchline ...

Open Data or Energy do not need constant farming.

Meta Data Sleeps *Four Two Long*.

The Cooley–Tukey algorithm, the Fast Fourier Transform, rearranges phase space, without warning. This is of course what it is intended to do, it is not intended to rationalize time travel or take the seasons out of order as much as a Texas summer could use a little snow. Twilight phases of the day and year (365.25 days) can only be sequentially rearranged (first quarter exchanged for the second etc.) if you exchange the first half for the second. The FFT reduces the classes to “even” and “odd” - roughly an even (ramp) Equinox followed by odd desire for Lemonade or Hot Chocolate.

Energy is universally conserved which is to say it is a 24x7 world all filled up. How does the sun “know” it is Winter. Simply put, it doesn't need to. The path of the average duration of sunlight back and forth is the haversine. This is the `<owl:functionalEquivalent />` which does the WWW Energy and meta data bookkeeping.