

If Our Universe Were One Year Old

By [Rajkishore](#) | Aug 5, 2015

When we talk about time in a classroom, we often refer to a 40 minute class or the weekly schedule or the annual event of the school. History teachers are fortunate to engage their learners with data, evidence and records of few centuries & millenia before. Geographers & evolutionary biology teachers have the disciplinary advantage of pushing that boundary further to a much bigger timescale. When the astronomers say the age of our universe is approximately 13.8 billion years (13,800,000,000 years), for a learner (in her preteen & teen years), such large timescale doesn't make immediate sense to relate to unless we scale it down to something more tangible.

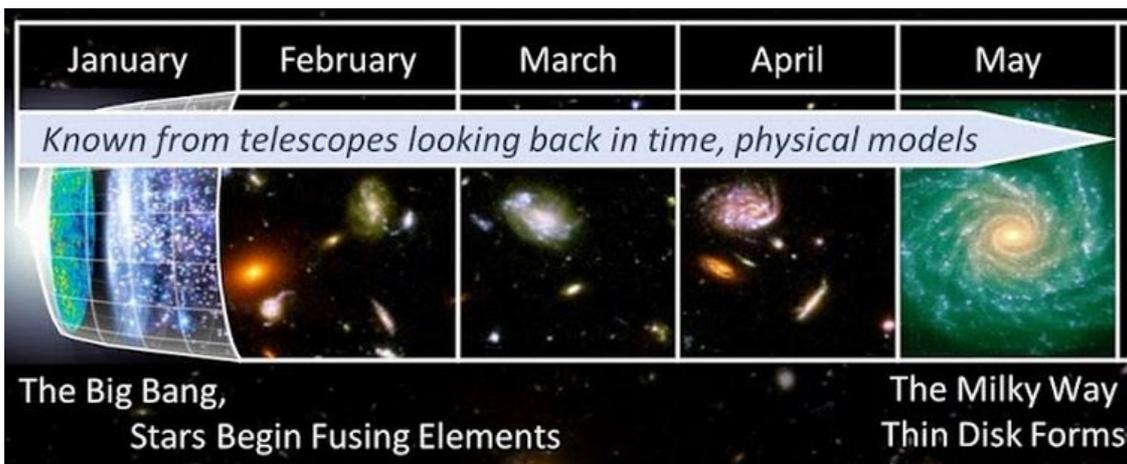
Astronomer Carl Sagan shows us how to do it. He has come up with something what he calls a *cosmic calendar*.

"The **Cosmic Calendar** is a method to visualize the vast history of the universe in which its 13.8 billion year lifetime is condensed down into a single year. In this visualization, the birth of the universe took place at the beginning of January 1 at midnight, and the current moment as you are reading this sentence is mapped onto the end of December 31 at midnight."

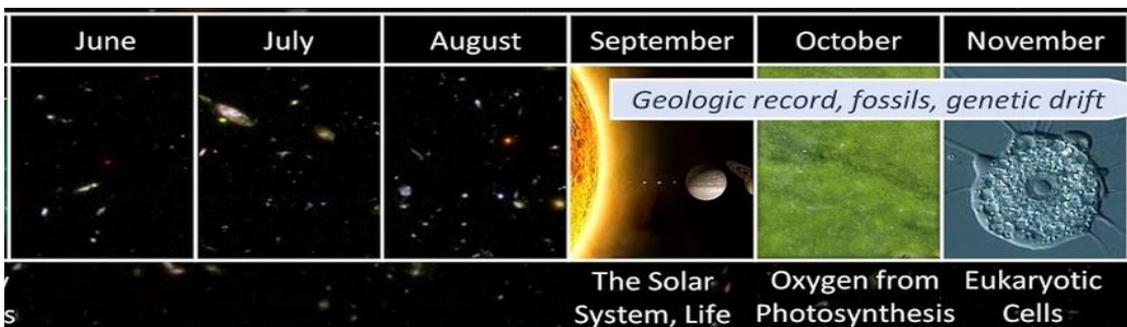
So the scale here is , 13.8 billion years (years as you & I use) = 1 cosmic calendar year.

Let us see what has happened (for us the Earthians) since the birth of the universe.

Our galaxy was formed in May.



By September, our solar system was formed. In October, life began on earth and later in the month plants started making oxygen and in November we had the emergence of eukaryotic cells.



December is the most eventful month in our cosmic calendar. By 14th, sponges appeared.

As you narrate the story to your learners, they may be wondering when are we, humans coming! There is time for that.

December 1 st	2	3	4	5	6	7
8	9	10	11	12	13	14 Sponges

On 18th December, vertebrates appeared. On 20th fish. Then the insects, then the reptiles. Dinosaurs came on 25th.

Then came the birds and then the flowers on 28th. (When are we coming, it is already end of December?)



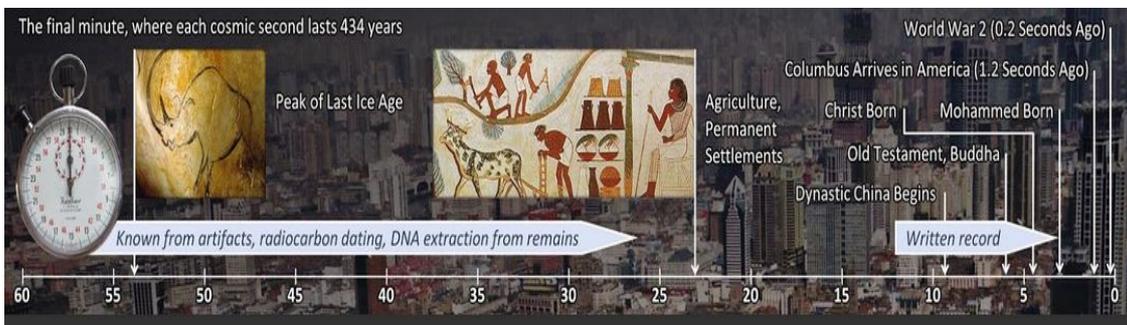
Dinosaurs ruled for 5 cosmic days and become extinct by 30th. It is only around 11:52pm that the modern man evolved in Africa!

Last 3 seconds we spent in migrating all over the globe.



So, on the cosmic scale we, the entire human race are there for just 8 minutes.

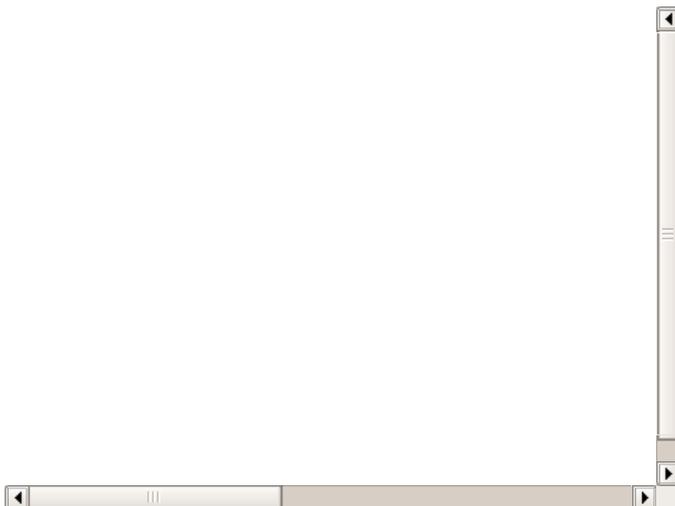
Let us look at the events of the last minute.



Images are adapted from [here](#).

Watch Carl Sagan share the cosmic story

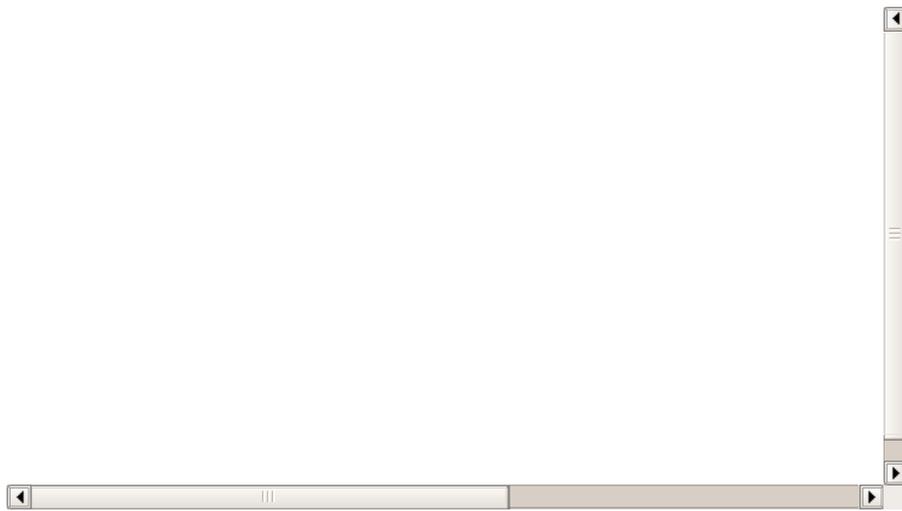
The clip is from the most watched science documentary in the world, [Cosmos](#)



(In 1980, the universe was calculated to be around 15 billion years)

In the 2014 sequel series, *Cosmos: A Spacetime Odyssey*, host Neil deGrasse Tyson presents the same concept of a Cosmic Calendar, but using the revised age of the universe.

Watch Dr Tyson's version which was telecast in NatGeo.

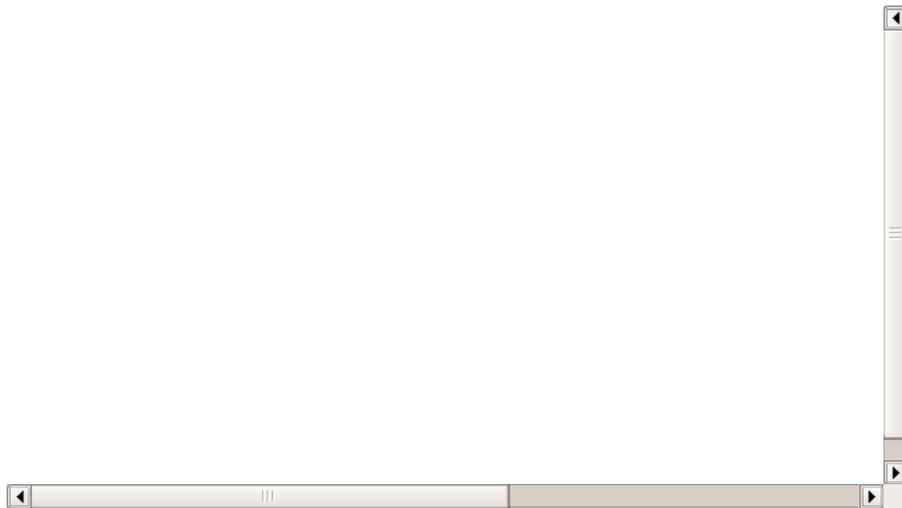


Cosmic Calendar

Cosmic calendar is a treasure trove for history, science & geography teachers to help the learners see the big picture. Did I miss out on the math teachers? Well, what better way than the cosmic calendar to talk about scale down and scale up concept. They can have fun with their own versions of it. (Plot your 12 years of memorable events in 24 hour scale, show India's story since 1947 in a scaled down timeline of 10 days).

For senior classes, it is important to help them ponder, explore and find answers for questions like if we came only at 11:52pm in a cosmic sense than how do we know what has happened before us? How can we prove it?

On a poignant note, as brilliantly animated by Steve Cutts,



we are such late & greedy entrants on the cosmic scale, what gives us the right to plunder the resources that are for every species and for the future?

Category: Classroom Resources

Subject: Environmental Science

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Grade/Standard: Class 6-8

Class 9-10

Class 11-12

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