:ting Time In Perspective – UPDATED

ust 22, 2013 By Tim Urban

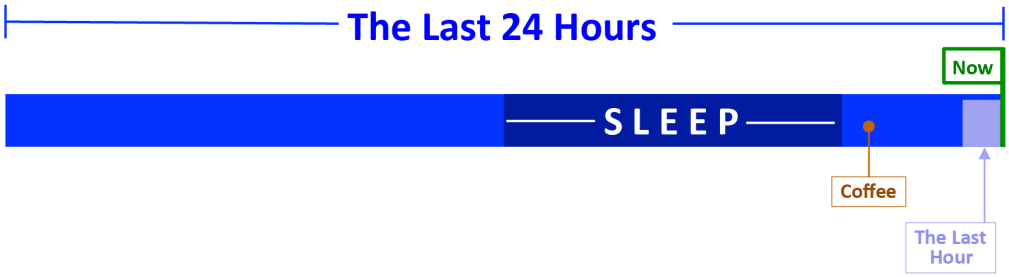
ns are good at a lot of things, but putting time in perspective is not one of them. It's not our fault pans of time in human history, and even more so in natural history, are so vast compared to the f our life and recent history that it's almost impossible to get a handle on it. If the Earth formed night and the present moment is the next midnight, 24 hours later, modern humans have been d since 11:59:59pm—1 second. And if human history itself spans 24 hours from one midnight to the next, 14 minutes represents the time since Christ.

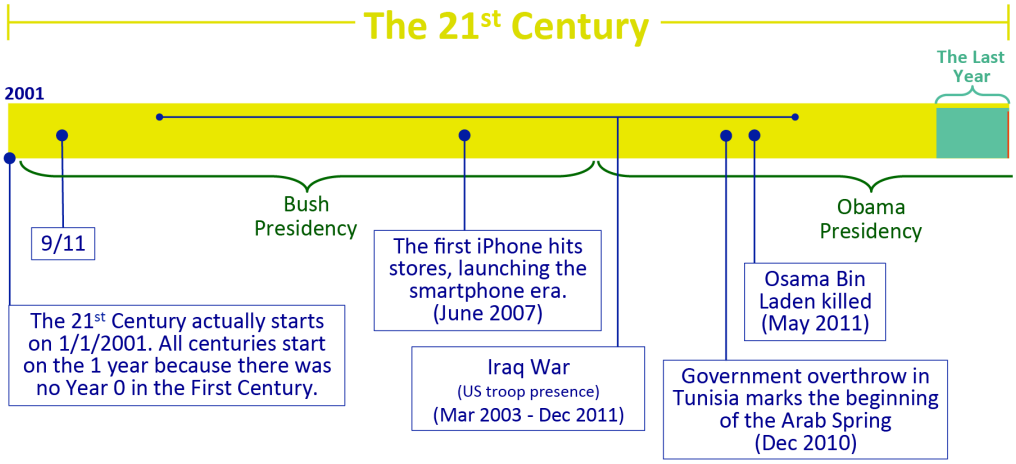
To try to grasp some perspective, I mapped out the history of time as a series of growing timelines—each timeline contains all the previous timelines (colors will help you see which timelines are which). All timeline lengths are exactly accurate to the amount of time they're expressing.

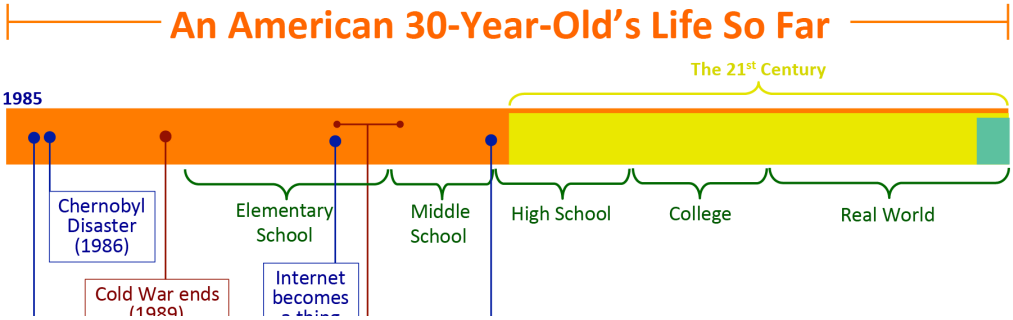
A note on dates: When it comes to the far-back past, most of the dates we know are the subject of ongoing debate. For these timelines, it's cumbersome to put a ~ sign before every ancient date or an asterisk explaining that the date is still being debated, so I just used the most widely accepted dates and left it at that.

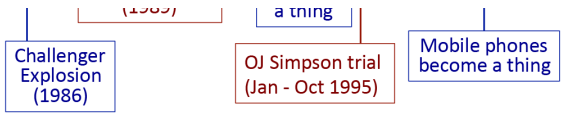
For teachers and parents and people who hate cursing: here's a clean, Rated G version.

TIME BY WAIT BUT WHY

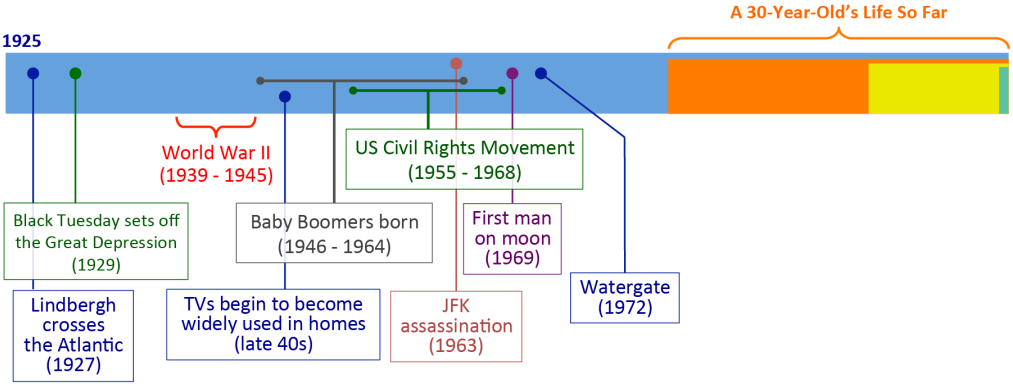






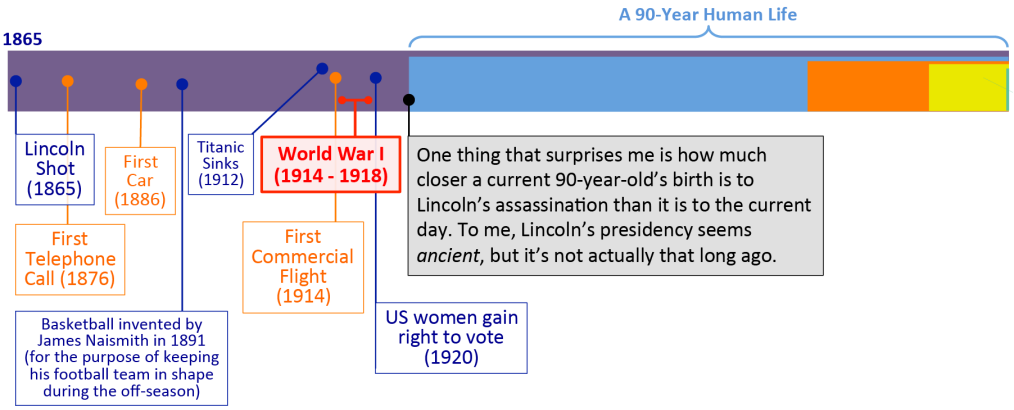


A Long Human Life (90 Years)



Post American Civil War Era

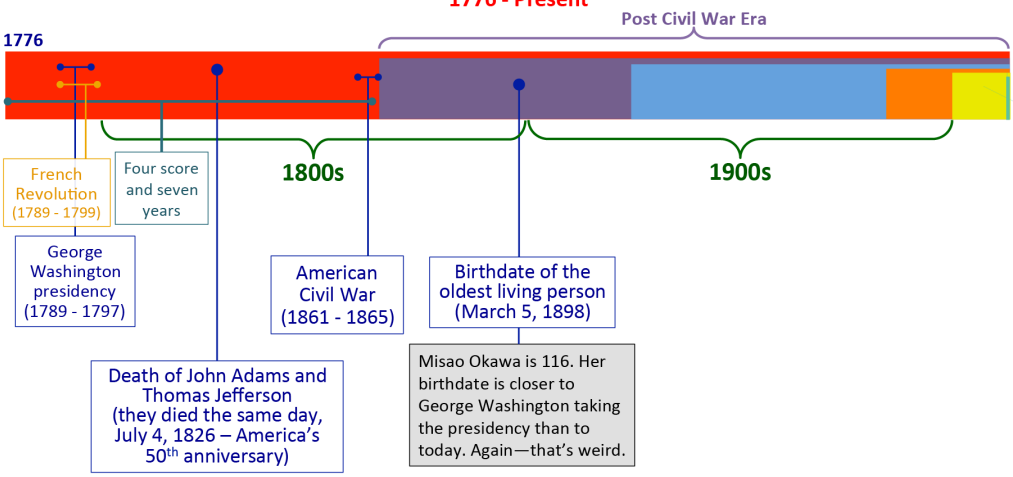
1865 - Present



One thing that surprises me is how much closer a current 90-year-old's birth is to Lincoln's assassination than it is to the current day. To me, Lincoln's presidency seems *ancient*, but it's not actually that long ago.

US History

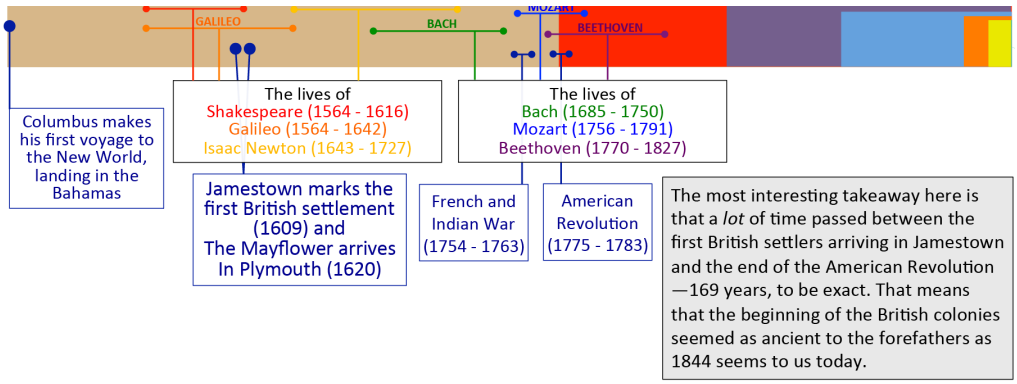
1776 - Present

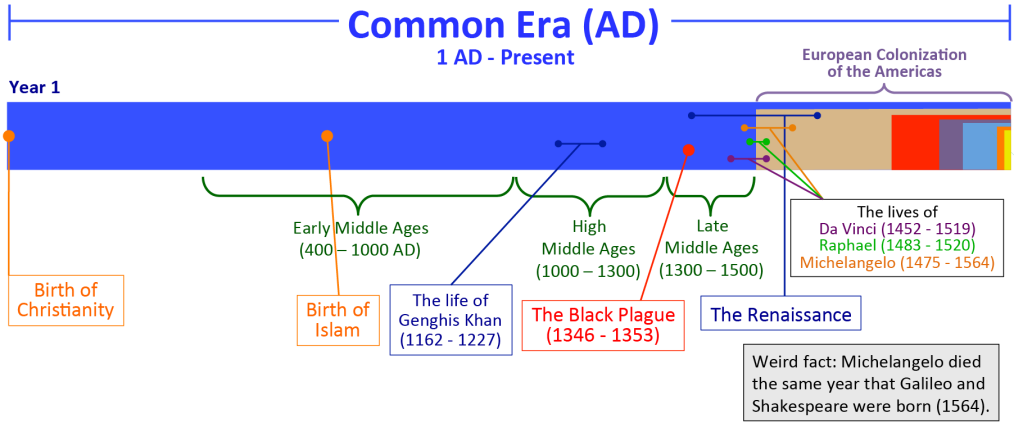


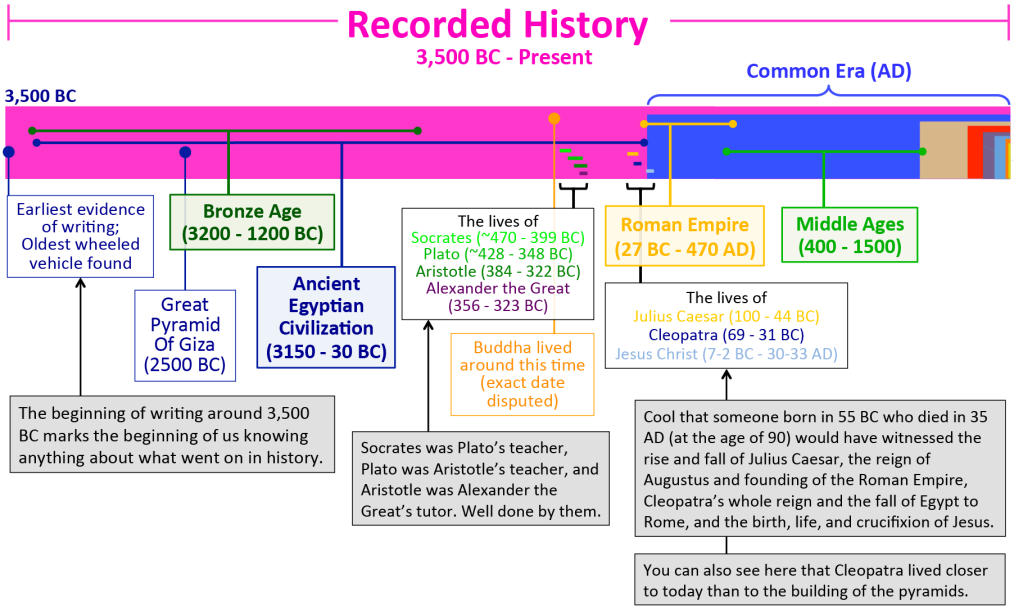
Misao Okawa is 116. Her birthdate is closer to George Washington taking the presidency than to today. Again—that's weird.

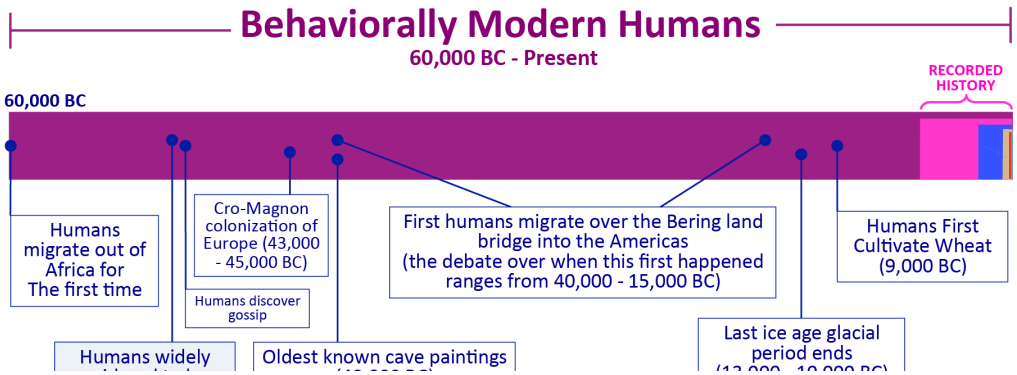
European Colonization of the Americas

1492 - Present


GALILEO
BACH
BEETHOVEN
Columbus makes his first voyage to the New World, landing in the Bahamas
The lives of
Shakespeare (1564 - 1616)
Galileo (1564 - 1642)
Isaac Newton (1643 - 1727)
Jamestown marks the first British settlement (1609) and The Mayflower arrives In Plymouth (1620)
The lives of
Bach (1685 - 1750)
Mozart (1756 - 1791)
Beethoven (1770 - 1827)
French and Indian War (1754 - 1763)
American Revolution (1775 - 1783)
The most interesting takeaway here is that a *lot* of time passed between the first British settlers arriving in Jamestown and the end of the American Revolution—169 years, to be exact. That means that the beginning of the British colonies seemed as ancient to the forefathers as 1844 seems to us today.


Common Era (AD)
1 AD - Present
Year 1
European Colonization of the Americas
Early Middle Ages (400 – 1000 AD)
High Middle Ages (1000 – 1300)
Late Middle Ages (1300 – 1500)
Birth of Christianity
Birth of Islam
The life of Genghis Khan (1162 - 1227)
The Black Plague (1346 - 1353)
The Renaissance
The lives of
Da Vinci (1452 - 1519)
Raphael (1483 - 1520)
Michelangelo (1475 - 1564)
Weird fact: Michelangelo died the same year that Galileo and Shakespeare were born (1564).


Recorded History
3,500 BC - Present
Common Era (AD)
3,500 BC
Earliest evidence of writing; Oldest wheeled vehicle found
Bronze Age (3200 - 1200 BC)
Great Pyramid Of Giza (2500 BC)
Ancient Egyptian Civilization (3150 - 30 BC)
The lives of
Socrates (~470 - 399 BC)
Plato (~428 - 348 BC)
Aristotle (384 - 322 BC)
Alexander the Great (356 - 323 BC)
Buddha lived around this time (exact date disputed)
Roman Empire (27 BC - 470 AD)
Middle Ages (400 - 1500)
The lives of
Julius Caesar (100 - 44 BC)
Cleopatra (69 - 31 BC)
Jesus Christ (7-2 BC - 30-33 AD)
The beginning of writing around 3,500 BC marks the beginning of us knowing anything about what went on in history.
Socrates was Plato's teacher, Plato was Aristotle's teacher, and Aristotle was Alexander the Great's tutor. Well done by them.
Cool that someone born in 55 BC who died in 35 AD (at the age of 90) would have witnessed the rise and fall of Julius Caesar, the reign of Augustus and founding of the Roman Empire, Cleopatra's whole reign and the fall of Egypt to Rome, and the birth, life, and crucifixion of Jesus.
You can also see here that Cleopatra lived closer to today than to the building of the pyramids.


Behaviorally Modern Humans
60,000 BC - Present
RECORDED HISTORY
60,000 BC
Humans migrate out of Africa for The first time
Cro-Magnon colonization of Europe (43,000 - 45,000 BC)
Humans discover gossip
First humans migrate over the Bering land bridge into the Americas (the debate over when this first happened ranges from 40,000 - 15,000 BC)
Humans First Cultivate Wheat (9,000 BC)
Humans widely
Oldest known cave paintings
Last ice age glacial period ends

considered to have complex language by this point (50,000 BC)

(40,000 BC)

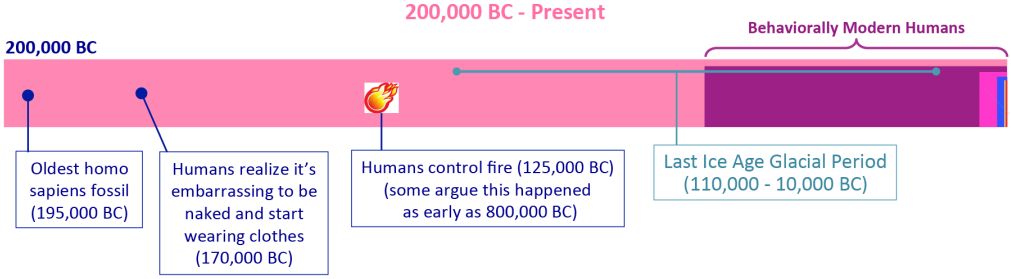
Neanderthals call it a day (40,000 BC)

(13,000 - 10,000 BC)

Though humans had been anatomically modern for quite some time by this point, it wasn't until 60,000 - 40,000 years ago that experts think humans stopped embarrassing themselves and became "behaviorally modern"—meaning exhibiting complex symbolic thought, cultural creativity, and all the other things that make humans humans. It's widely believed that this rapid development is tied directly to the development of complex language in humans.

Anatomically Modern Humans

200,000 BC - Present



Okay so let's review where we are here. For the entire stretch of this timeline, humans looked just like modern humans.

The light pink is about 150,000 years of humans being entirely unimpressive. No talking, no writing. And little migration—they hung around Africa mostly. The one non-mediocre thing they did was learn how to control fire (around 125,000 BC at the latest). Weird to picture anatomically modern humans that look like us existing together for 150,000 years without being able to talk to each other (this seems to be the consensus although some argue that language developed earlier).

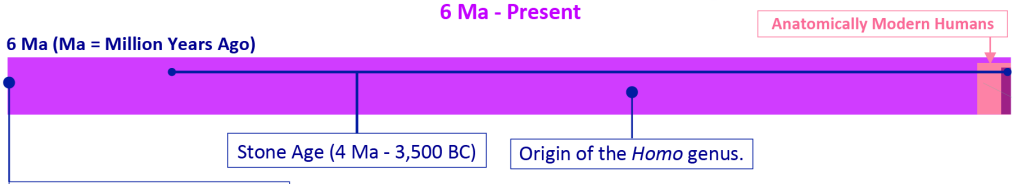
Then the darker maroon area represents 60,000 years of humans talking to each other but deciding there was no point in writing any of it down—so we don't really know what went on then either.

Look how far to the right the bright pink area is. That's recorded history. So when we refer to the most ancient of ancient history, we're still just talking about the bright pink—less than 3% of the time humans that look like us have existed.

Even smaller is the blue area, which is AD. All this stuff we consider incredibly old—Jesus Christ, Muhammed, the Roman Empire, the Vikings, the Crusades, kings and knights and castles, thinking the Earth was flat and the sun revolved around it—all of that happened in the blue section.

Human Divergence From Apes

6 Ma - Present

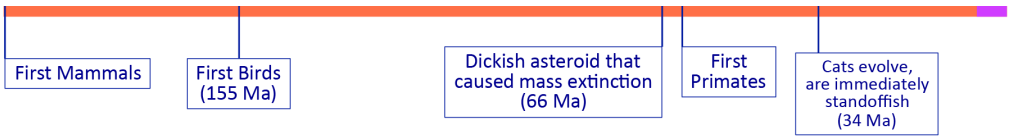


This split 6 million years ago marked the beginning of a long series of botches by our side of the Hominini tribe in the quest to become human. 2.3 million years ago was the beginning of the official *Homo* genus, which then led to another series of underwhelming missteps before we finally got to *Homo sapiens*. You can see how long it took to get from ape-like to human above. That's a *lot* of purple.

And as we saw on the previous timeline, even when we hit the lighter pink color all the way on the right, we were hardly on top of things yet. The bright pink Recorded History section is such a small part of this it doesn't even make up one pixel of width, so it's gone.

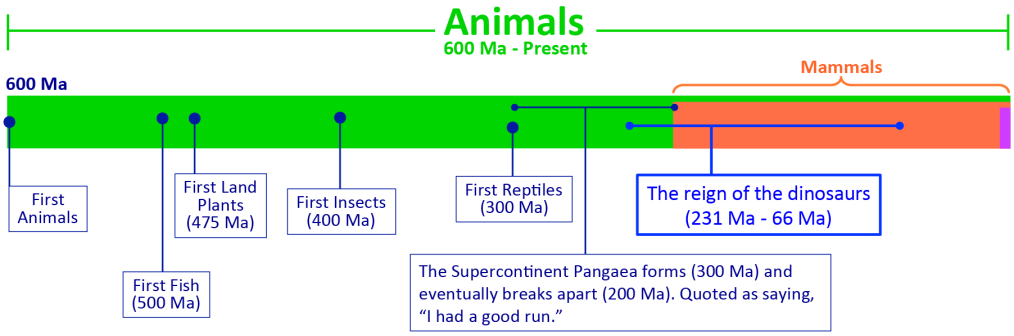
Mammals

200 Ma - Present



So on one hand, the *Cretaceous–Paleogene extinction event*—otherwise known as the massive asteroid that killed all the dinosaurs—was shitty. It wiped out an estimated *75% of all species alive at the time.*

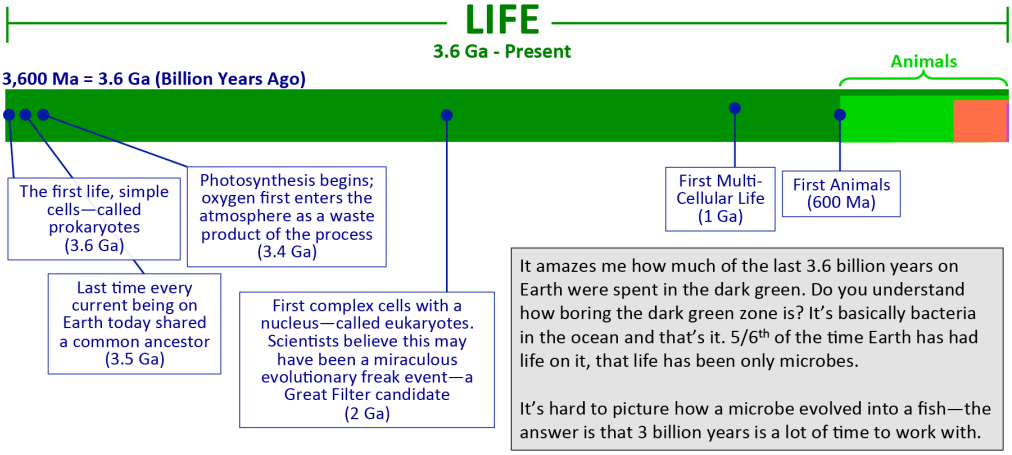
But on the other hand, up until then, mammals had spent 135 million years being little tree rodents, just trying to stay out of the way of the big boys and get by—and it's believed that the mass extinction is exactly what paved the way for mammals to thrive, unbothered, and ultimately dominate the Earth.



A couple things to note here besides insects crashing the party in 400 million BC and ruining everything.

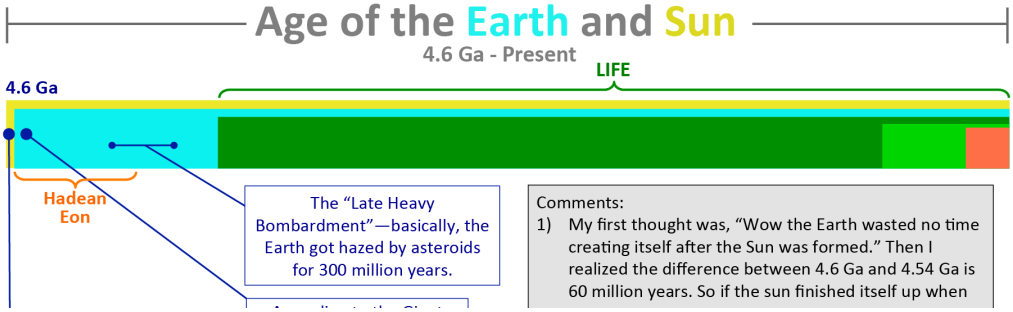
1) We need to step back and appreciate the sheer magnitude of time we're now dealing with. As an example, Pangaea, the supercontinent formed by all the current continents cuddling, just came and went in like an *inch* of this timeline. And continents move a couple *centimeters* a year. Pangaea breaking up, by the way, is why Australian animals are so weird. They evolved isolated from everyone else from about 40 Ma on, after they broke off completely from the other continents.

2) Given the magnitude of time we're talking about, you gotta give it to the dinosaurs. 165 million years! Humans have been sentient for like .1 million and we're on the verge of blowing the planet up. To put that in perspective, the ever-foolish Stegosaurus lived 150 million years ago. Meanwhile, the Tyrannosaurus Rex lived 67 million years ago. That means the T-Rex is closer in time to seeing a Justin Bieber concert than seeing a live Stegosaurus. And if that asteroid hadn't hit—maybe they'd still be ruling the world. Maybe they would have even developed into an intelligent species and be taking their kids to violin lessons now. Who knows.



It amazes me how much of the last 3.6 billion years on Earth were spent in the dark green. Do you understand how boring the dark green zone is? It's basically bacteria in the ocean and that's it. 5/6th of the time Earth has had life on it, that life has been only microbes.

It's hard to picture how a microbe evolved into a fish—the answer is that 3 billion years is a lot of time to work with.



Comments:
1) My first thought was, "Wow the Earth wasted no time creating itself after the Sun was formed." Then I realized the difference between 4.6 Ga and 4.54 Ga is 60 million years. So if the sun finished itself up when

The Sun (yellow timeline) forms from a giant cloud of floating gas (4.6 Ga); The Earth (blue timeline) forms from excess debris circling around the sun (4.54 Ga)

According to the Giant Impact Hypothesis, the Moon formed when a small planet smashed into the Earth. The debris from the Earth's crust eventually coalesced into what is now the Moon.

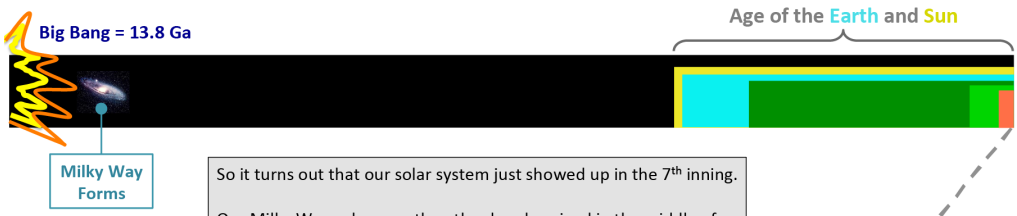
the T-Rex was ruling the Earth, the Earth would have just formed now. Long time.

2) The Hadean Eon was a *hectic* time to be on Earth. Asteroid explosions, volcanic eruptions, rivers of fire… and now we just get to sit by a bubbling spring in a meadow and listen to a bird chirping. Lucky!

3) Cool that there was this floating cloud of gas that formed the sun and all the planets. That means that my chin is made up of stuff from that cloud. As is the laptop I'm typing on. As are you. As is everything.

Age of the Universe

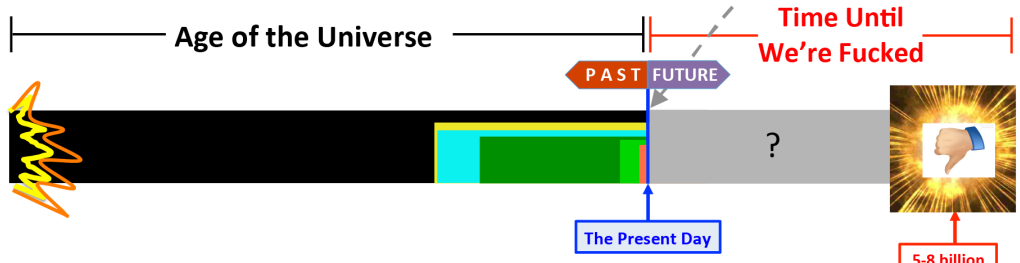
13.8 Ga - Present



So it turns out that our solar system just showed up in the 7th inning.

Our Milky Way galaxy, on the other hand, arrived in the middle of the 1st, only 600 million years into things.

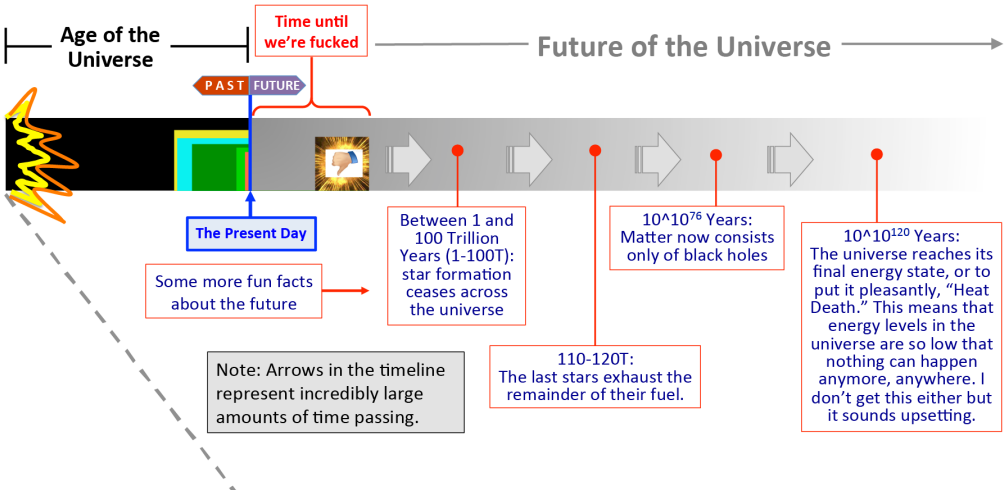
If you're wondering, I intend to avoid the topic of The Big Bang, because I don't understand it. I'm just told to accept that at one point, the entire universe was condensed into a pin point "singularity"—cause that makes perfect sense. Instead of talking about it, I visually depicted it, so just be appreciative of that.



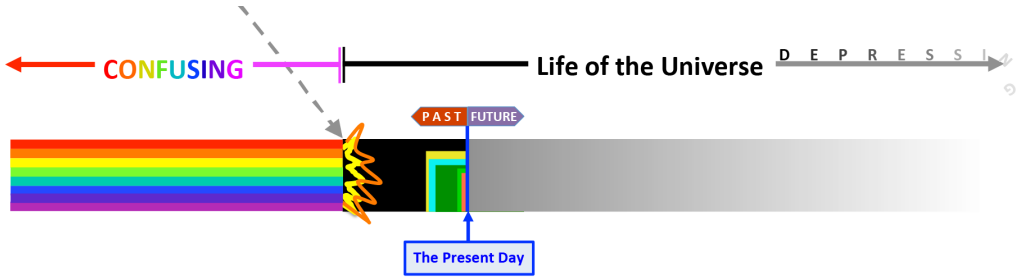
Just when you think you've got the sun right where you want him, you hear the news that in 5-8 billion years it's going to expand to 250 times its normal size and envelop the Earth. And that's not the only shit we have coming our way:

- In 800 million years, the CO_2 levels on the Earth will have dropped so low that there won't be any more photosynthesis—which means no more oxygen.
- In 1 billion years, the sun is going to reach a luminosity level that will evaporate all the water on the Earth.
- In 2.8 billion years, the Earth's average temperature will be an unpleasant 296 degrees Fahrenheit.
- By 3.5 billion years, our atmosphere will resemble that of Venus, the hellhole.
- All just in time for our galaxy to collide with the nearby Andromeda Galaxy half a billion years later.
- And just when the *last* thing we'll need is for the sun to expand to 250 times its size and envelop the Earth, that's exactly what it's going to do.

Shame.



Note: Arrows in the timeline represent incredibly large amounts of time passing.



Now that we're here, we might as well just zoom all the way out.

I don't really get it.

I'm not really sure why it's okay that the eventual fate of the universe is cold silence, and I certainly as hell don't understand what was going on before The Big Bang.

And this is why the most important skill of a species intelligent enough to understand both their insignificance and their mortality is the capability for *distraction*. Because the facts of reality are just too intense.

This is also a reminder of all the things that needed to happen *exactly* as they happened, for billions of years, on this very particular planet, for you to exist.

Hopefully this little exercise has put things into perspective a bit—at least for the next three minutes, until the next website you click on tears you back into thinking that things matter.

SOURCES

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- Gerontology Research Group. http://www.grg.org/Adams/E.HTM
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Posters

You can get the poster of this graphic here. It comes in both normal poster size and long skinny vertical size. And a prettier, less offensive version.

If you liked this, these are for you too:

The AI Revolution: The Road to Superintelligence – A closer, somewhat horrifying look at the future

SpaceX's Big Fucking Rocket: The Full Story – A post I got to work on with Elon Musk that convinced me that humans will be on Mars by 2025.