



2012 Apocalyptic Soup

*Despite having a 100 percent failure rate, apocalyptic theories thrive.
With 2012, we are now entering tinfoil helmet territory!*

Repeat after me...."there is nothing to fear but fear itself."

BY THOMAS M. CIESLA

"My only friend is my little dog, and I worry about when I should put her to sleep so she won't suffer during the 2012 catastrophe."

"Yesterday I was considering killing myself, the baby in my stomach and my beloved 2 year old daughter before December 2012 for fear of having to experience the Earth's destruction. Please tell me the truth. I am very scared."

"I am 15, and iv(sic) been told that in 2012 there are supposed to be meteor showers, earthquakes, tsunamis, tornadoes and everything. I've been so worried for the last year, that I have started eating half of what I used to and don't sleep and I just worry."

The above statements are just a few of the emails that NASA's David Morrison receives on the *Ask An Astrobiologist* website. Morrison adds, "I've had two teenagers considering killing themselves because they didn't want to be around when the world ends." This same angst of a 2012 apocalypse is even felt by otherwise rational adults, but why? One could argue that end-of-the-world beliefs were firmly planted

in Puritan New England. Originating with apocalyptic forms of religion popular in the colonies, over time these beliefs have evolved and gone mainstream in the secular world. Nowadays, the end of the world is always just around the corner.¹

Fear is another reason: we like to be frightened. In marketing and popular media, fear like sex, sells, and it sells big time. There are hundreds of books available on 2012, an untold number of websites, and movies and numerous television shows. Television 'documentaries' have been produced, incorporating just enough science fact to be molded into preposterous scenarios, or at the very least, leave the issue open by ending the show with questions such as, "Could it happen?" In the words of Gordon Gecko in the movie Wall Street, "Greed is good."²

Origin of the 2012 Doomsday



Mayan scholars have long known that one of the Mayan calendars, named the *Long Count* by archeologists, ends on December 21, 2012, which coincides with the winter solstice.³ Little attention was paid to that discovery because the Mayans used a variety of calendars. The Tzolkin, a religious calendar has a 260 day cycle; The Haab, a civil calendar, has a 365 day cycle; the Calendar Round Date, a combination of the first two calendars has a repetitive pattern of 52 Haab years. The Long Count, spanning 5,125 years, is thought to be the creation of the Mayans, while the Tzolkin and the Haab calendars were inherited by the Mayans from other Mesoamerican peoples.

In 1966, Harvard professor Michael D. Coles *THE MAYA*, states "Armageddon would overtake the degenerative peoples of the world and all creation on the final day of the thirteenth baktun."⁴ Then in 1975, two books were released that garnered attention within New Age circles: *Mexico Mystique: The Coming Sixth Age of Consciousness* by Frank Waters, and *The Invisible Landscape*, by Dennis and Terence McKenna. In the Mexico Mystique,

¹ For a list of past apocalyptic predictions check here: http://en.wikipedia.org/wiki/Doomsday_predictions

² The \$200 million blockbuster movie, 2012, earned almost a billion dollars in ticket sales.

³ The correlation between the Mayan calendar and our modern day calendar went through a series of refinements by the likes of John Goodman, astronomer John Martin Hernandez, and John Eric Sydney Thompson.

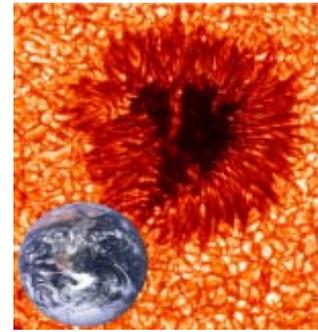
⁴ In the Long Count calendar, 20 days = a uinal, 18 uninals = one tun, 20 tuns = one katun, and 20 katuns = one baktun.

Waters writes, “the end of the Great Cycle⁵ ...when the world will be destroyed by catastrophic earthquakes.” In the Invisible Landscape, the McKenna’s offer December 21, 2012 as “the moment of potential transformative opportunity.”

In 1987 Jose Arguelles⁶ book, *The Mayan Factor: Path Beyond Technology*, claims, “the Earth will be bombarded by a beam of invisible galactic life threads.” In 2007, Arguelles released, *Apocalypse 2012: An Investigation Into Civilization’s End*, Arguelles became convinced that the Long Count calendar predicts a solar blast that will take out the power grid, creating chaos around the world.

In 1995, interest in 2012 expanded beyond the New Age community into the general public with the publication of *Mayan Cosmogogenesis* by John Major Jenkins. In it he predicts, “tremendous transformation from one world age to another.” This was nothing new, other authors had announced the same basic concept, but what set Jenkins’ book apart was his mention of a ‘galactic alignment’ between the Earth, Sun and the equatorial plane of our galaxy. Now we’re talking; this was something New Age writers, the lunatic fringe, and the popular media could manipulate into an apocalyptic frenzy. In 2002, the final episodes of the television show *The X-Files* (Parts 1 & 2) features December 22, 2012 as the final ‘colonization’, and mentions the Mayan calendar.

In 2006, author David Pinchbeck published *The Return of Quetzancoat*, in which he claims 2012 as the dawning of a new age, a transformation of human consciousness and the beginning of a new world order. Pinchbeck can be considered as one of the leading spokespersons for this 2012 transformation. It should be noted that Pinchbeck, like the McKenna’s are users and advocates of psycho active drugs. During a trip to Brazil in 2003, Pinchbeck attended church sessions whose members take doses of DMT-containing ayahuasce brew. At that time, Pinchbeck began receiving transmission from an entity identifying itself as Quetzalcoat, foretelling of “great change to our world.” Pinchbeck also envisions total economic collapse, nuclear war, and the collapse of the United States within five years of 2012.



Size comparison of Earth and a sunspot. Credit: The Royal Swedish Academy of Sciences, V.M.S. Henriques (sunspot), NASA Apollo 17 (Earth).

⁵ The Great Cycle — equal to 13 baktuns – is a minor component in far larger Mayan chronological periods.

⁶ Mr. Arguelles is also the mastermind of the Harmonic Convergence movement. In 1993 he announced that he was the ‘living channel’ of the ancient Mayan ruler, Pacal Votan.

Beyond the books⁷, magazines, and websites dedicated to the impending doom on December 21, 2012, no one media event had the widespread impact on public thought as the movie *2012*. Released by Sony in 2009, this movie represents the Hollywood special effects machine at its best and the script was created to scare the hell out of you.⁸ The special effects were phenomenal, though the science displayed is almost cartoon-ish. But, it's just entertainment, right?



Source: Columbia TriStar Marketing Group Inc.

Around the same time as the release of the movie, several studio's produced television programs that exhibited the same casual handling of the science behind their concepts. The History Channel produced, *The Mayan Doomsday Prophecy* (2007), *Doomsday 2012 – The End of Days*, and *Nostradamus 2012* (2009). In 2006 ABC News 20/20 aired *Last Days on Earth*, and in 2008, the A&E Channel aired *Seven Signs of the Apocalypse*. Movies and television shows are the most effective way of delivering a message to the broadest possible audience, and constant reruns help reinforce the bad science and fear in viewers minds.

Apocalyptic Soup

What will the 2012 End Of The World be like? The great thing about a highly publicized apocalyptic theory is that it becomes a sort of fly-paper – anything you throw at it will stick as a believable scenario. Let's explore some of the major theories for the disasters happening on 12-21-2012.

1. ***The Prediction: Solar storms blast Earth and cause a shift in the geomagnetic poles.***

This scenario has the Sun releasing a mega solar flare aimed directly at Earth. In addition to triggering a world-wide power grid collapse, the energy release by the Sun causes the Earth's geomagnetic poles to reverse with catastrophic results.

The Reality:

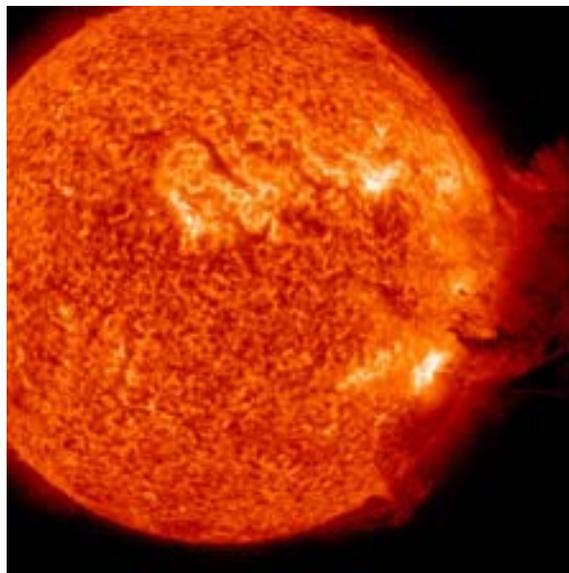
There are two kernels of truth with this prediction: 1) the Sun does produce solar flares (a few that have been newsworthy lately), and 2) the Earth's geomagnetic poles have reversed

⁷ Over 60 million copies of the Left Behind series have sold to date.

⁸ The Sony studio launched a website operated by the fictional ***Institute for Human Continuity***, where filmgoers could register for a lottery number to be part of a small group to be rescued from the destruction.

numerous times during the history of our planet. That, however, is where the truth ends. There is no evidence that solar activity – no matter how intense – can affect the workings of Earth’s interior dynamo that is responsible for the geomagnetic field.

The Sun experiences a roughly eleven-year sunspot cycle. As the cycle reaches its maximum strength the number of sunspots rises from around 50 to over 250. Sunspots, visible because that area is slightly cooler than the surrounding surface, are points where magnetic fields from within the Sun burst through the surface as solar flares. Usually the magnetic lines simply loop back into the Sun, but sometimes the eruption is strong enough to expel material from the Sun in what are known as coronal mass ejections (CME). These CME’s are streams of highly charged particles traveling at millions of miles an hour from the Sun. If a CME is pointed at the Earth (which occasionally happens), it can affect satellites, air travel near the poles, and create the beautiful (and harmless) Aurora Borealis, created when the particles are caught by the Earth’s magnetosphere. Despite a few fairly strong solar flares, our current cycle – Cycle 24 – started out weak and scientists believe that the maximum due in 2013 will be unimpressive. Based on three different avenues of scientific investigation, scientists see no evidence of a ‘killer’ solar flare during Cycle 24. Predictions for Cycle 25 are even less impressive, with some solar astronomers predicting a repeat of the Maunder Minimum.⁹



Dateline: 6/7/2011: One of the most spectacular solar prominences ever recorded. Earth received a glancing blow from the CME, creating nice auroral displays. Credit - SDO's Atmospheric Imaging Assembly.

Geomagnetic Pole Reversal

Examination of rock strata has shown the Earth geomagnetic poles have flipped numerous times over the last 4.5 billion years. These reversals come at irregular intervals, averaging about 300,000 years, with the last occurring about 780,000 years ago. At first glance that might seem to indicate the planet is overdue for another reversal, but the chaotic nature of the recorded reversals tell us that predicting a timetable for such an event is pointless.

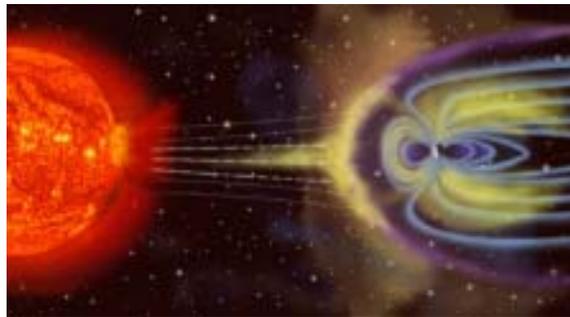
⁹ The Maunder Minimum was a 70 year period when there was almost no sunspot activity (1645-1715). This coincided with what is known as the Little Ice Age.



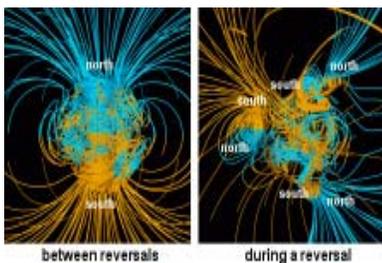
What creates our magnetosphere? At the center of our planet exists what is essentially a giant iron ball about 70% the size of the Moon. This iron core (with temperatures as hot as the Sun) is surrounded by a deep layer of liquid iron known as the outer core. These two regions are responsible for generating the Earth's magnetic field as the electrically conductive fluid of the outer core spins around the iron inner core. As the outer core spins, it 'boils' creating its own hurricanes so to speak, that affect how magnetic lines turn and twist. Scientists speculate that when the magnetic lines reach a certain level of twisting, they 'snap', and the magnetic poles slowly flip- from north to south. The key word here is 'slowly', as in hundreds of thousands of years to complete the reversal. During this reversal period, multiple north and south poles are created until the field finally stabilizes. The planet is never left 'naked' to cosmic radiation. Even when the geomagnetic field is at its weakest point, we still have our atmosphere to protect us from the Sun's radiation.

During the 20th century the north magnetic pole moved at 10km per year, but has recently sped up to 40km. At this rate the magnetic pole will exit North America and reach Siberia in a few decades.

Credit: Geological Survey of Canada



Artist depiction of the solar wind interacting with the Earth's magnetosphere, shielding life from harmful radiation. Not to scale. NASA



Computer simulation of the 3D magnetic field. Blue lines indicate inward flow, yellow is outward flow. Credit: Los Alamos National Laboratory

2. *The Prediction: Galactic Alignment and the Dark Rift cause chaos on Earth.*

Some proponents of this scenario claim that on 12-21-2012, the Earth and Sun will experience a 'rare alignment' with the galactic plane and the Dark Rift. This is supposed to cause a (geographical) pole shift resulting in deadly earthquakes

¹⁰ Mars and our Moon lack a magnetic field or a substantial atmosphere, so anything on the surface of either of these celestial bodies is exposed not just to solar radiation, but the even more deadly cosmic rays traveling through the galaxy.

(as in the movie 2012), tsunamis and floods, and according to some, trigger the Yellowstone supervolcano.

The Reality:

According to NASA’s David Morrison, “There is no galactic alignment, or at least, nothing out of the ordinary.” In fact, the Sun (from the Earth’s perspective) will be aligned with the ‘galactic equator’ and the Dark Rift from about 1970 to 2110 due to the precession of the equinoxes. These alignments are of no interest to science and create no changes in gravitational pull, solar radiation, or planetary orbits.



An almost comical special effects scene from the movie **2012** showing continents sliding into the ocean. Credit: Columbia TriStar Marketing Group Inc.

This ‘galactic alignment’ is something seen from an observation point on Earth and in reality happens twice a year as the Earth completes its orbit as we experience the Summer and Winter Solstice. Our solar system is located approximately 30,000 light years from the center of our galaxy. At that distance, even the existence of a black hole residing at the center of our galaxy,¹¹ has little – if any – influence on the Sun and our Solar System. Also, the rotational axis of the Sun is tilted ~ 60 degrees to the galactic equator, which is why the “milky way’ we see is at angle in the sky.

Another problem with this ‘galactic alignment’ issue is the simple fact that our solar system does not lie on the galactic equator. Currently, our Sun is roughly 30-100 light years above the galactic plane and rising.¹² Why? Gravitational forces created by the spinning mass of the galaxy cause our Sun (and other stars) to “bob” up and down through the galactic disk, which for our Sun takes 66 million years to complete one cycle. Despite our



Contrary to claims, these are the actual positions of the planets on 12/21/2012. Credit: Griffith Observatory

¹¹ Initially a mathematical construct, ‘black holes’ have moved beyond theory to reality based on recent observational evidence corroborating the existence of these bizarre celestial objects.

¹² Galactic plane and galactic equator are often interchanged, but there is a difference. The galactic plane is defined by a belt of H1 hydrogen that lies at the approximate center of the galactic disk. The galactic equator is an arbitrary line created for the convenience of positioning various objects in the galaxy. In truth, astronomers cannot specifically point to an equatorial center due to the amorphous nature of the observable galaxy.

The Annual Galactic Alignment



The 2012 Cocktail Recipe

Ingredients:

- one part society's lack of fundamental science principles
- one part embracement of pseudoscience
- one part self-validating set of beliefs
- two parts greed

Mix together, shake well, strain into western civilizations glass and garnish with a twist of fear.



The Andromeda Galaxy Is the Milky Way Galaxy's closest large spiral neighbor at roughly 2.5 million light years away. Also known as Messier 31, it is the largest galaxy in the Local Group of galaxies.

Earth-centric viewpoint, our solar system and the Sun¹³ never truly 'align' with the galactic equator or the Dark Rift.

Despite claims made by John Major Jenkins and Daniel Pinchbeck that the Dark Rift was spiritually significant to the Mayans, scholars find no mention of the Milky Way galaxy in their writings or stone inscriptions, nor anything special denoted to the Dark Rift. From an astronomical viewpoint, there is nothing exceptional about the Dark Rift, which is simply a collection of dense clouds of dust and gas, blocking our view in the visible spectrum of what lies behind. We can pierce these clouds via the infrared, ultraviolet and radio wave spectrums and find nothing special or 'magical' lurking behind them.

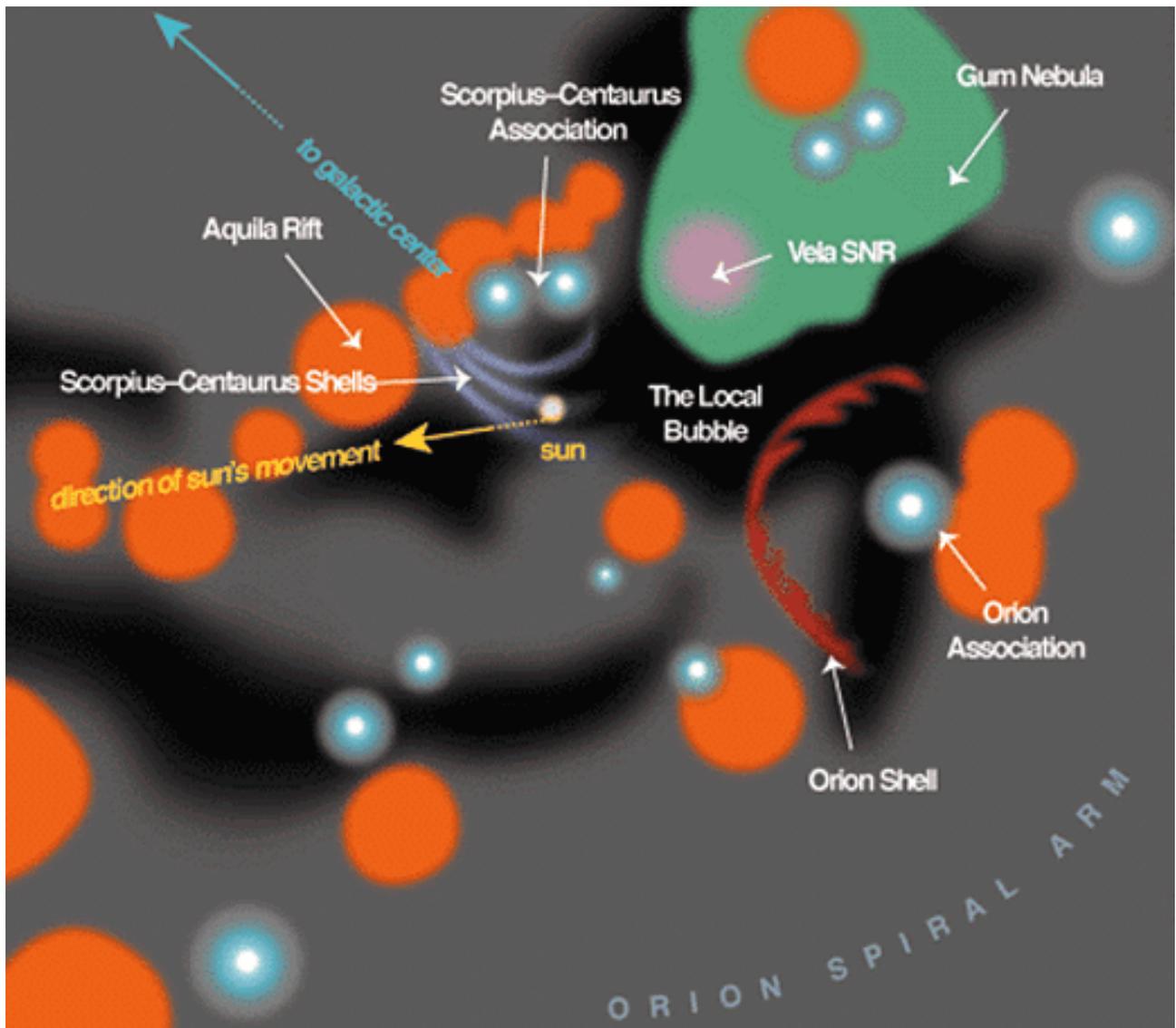
Most of us have seen pictures of other galaxies from land based and space based observatories. Astronomers are fairly confident that our Milky Way galaxy is a spiral design much like our closest neighbor the Andromeda galaxy.¹⁴ What most of us don't know is that though the galactic arms maintain long term stability, individual stars, like our Sun, move through the galaxy, traveling in and out of the galactic arms. Our solar system is currently traveling through an inter-arm area, along with a collection of celestial objects that make up our local neighborhood. The best way to envision this neighborhood is to think of a collection of bubbles, (not unlike soap bubbles floating through the air). Some bubbles are alone, some bump into others, and some burst.

Interstellar space is a complex structure of nebula, molecular clouds, stars and expanding shells of stellar matter from the explosions of supernova. As our solar system travels through the galaxy, our planet is more affected by what is in our immediate stellar neighborhood than by what exists in the center of the galaxy. For the past ten million years, the Sun has been traveling through a very low density region called the "Local Bubble" – a region thought to be between 100-150 parsecs¹⁵ in size, shaped similar to an hourglass. Astronomers believe the local bubble is an area of the Milky Way cleared away by the explosion of a supernova. It is likely responsible for life to flourish on Earth due to

¹³ 'Spiritual importance' must be viewed cautiously. Despite advancements in calendar creation and mathematics, the Mayans were a Stone Age civilization. They had no knowledge of the wheel, built no roads for commerce and trade, and practiced ritualistic sacrifices to appease their Gods.

¹⁴ Based on current measurements, the Milky Way and Andromeda galaxies are on a collision course and should collide in approximately two billions years.

¹⁵ A parsec equals 3.26 light years. One light year is approximately six trillion miles.

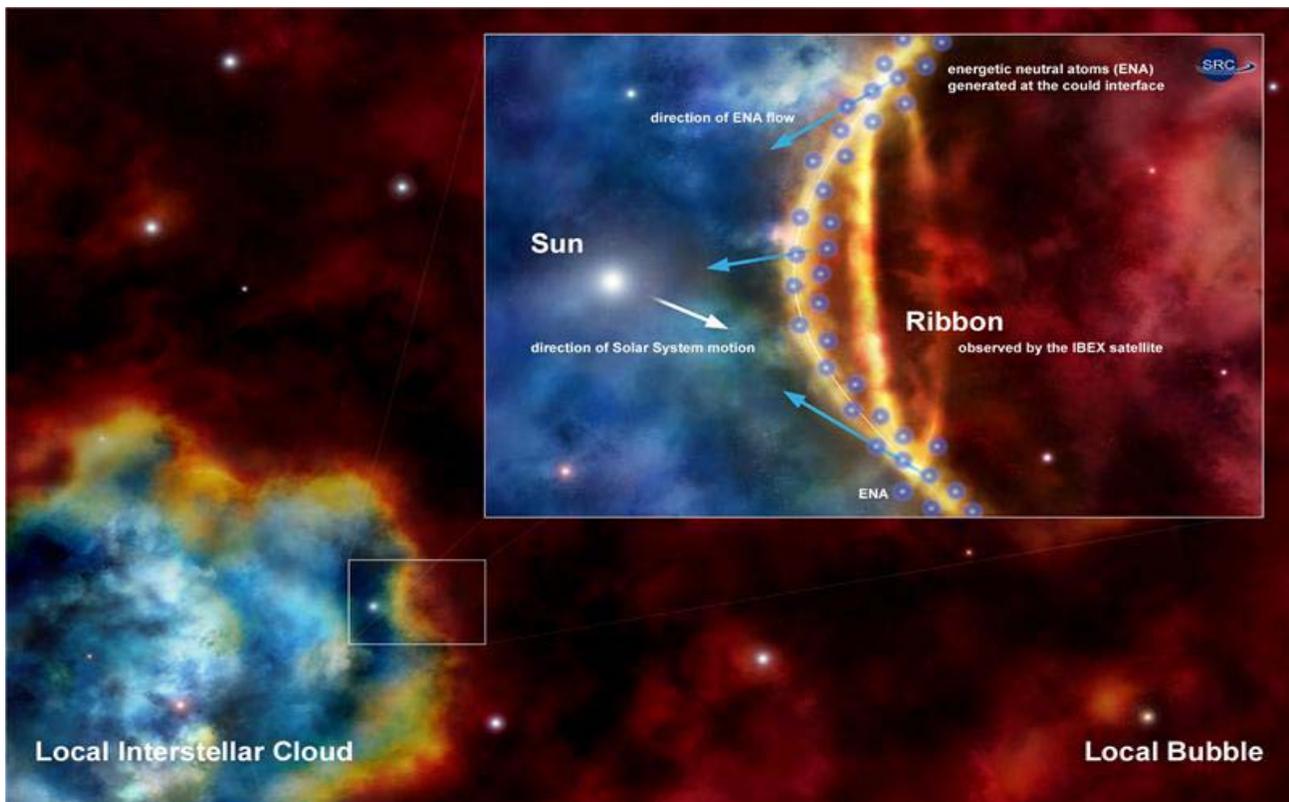


Artist impression of the Local Bubble and associated structures. The three curved whites bands near the Sun represent the "Local Fluff" a molecular cloud the Solar System recently encountered. Credit: Linda Huff (American Scientist) and Priscilla Frisch (U. Chicago)

to the absence of more energetic molecular clouds disrupting our solar environment.¹⁶

Surrounding the Local Bubble are a variety of expanding shells created by nearby star-forming regions and past stellar explosions. Fortunately, it will take millions of years before our solar system encounters the 'wall' of one of these shells. Scientists believe that these shock waves are dense enough to affect the heliosphere around our solar system, compressing it to allow an increase of cosmic radiation to reach the Earth's surface.

¹⁶ The Local Bubble includes a complex of low density molecular clouds about 10-30 light years in length, known as the Local Fluff (the Scorpius-Centaurus Shells shown above). The Sun appears to have entered part of this Local Fluff approximately 10,000 years ago.



In these images obtained by the IBEX satellite, the Local Bubble is the red/black background and the 'Local Fluff' is the blueish mass on the lower left. 'The Ribbon' shown in the insert marks the boundary between the two structures where energetic neutral atoms are generated. The Sun is moving towards this ribbon. Source: SRC/Tentaris, ACh/Maciej Frolow

Conclusion, the galactic alignment is not a rare cosmological event, and not even a true alignment. It is simply the creation of someone's mind based on a perspective of a line drawn from Earth, through the Sun and out to an arbitrary definition of where the galactic equator lies. There is also no chance of some sort of 'energy beam' impacting Earth from the center of the galaxy. As we have seen, the structure of the galaxy is complex and there is more to worry about from our local neighborhood than from something 30,000 light years away.

3. The prediction: Planet X/Nibiru/asteroid strikes the Earth.

There is more than one version of this scenario. Some 2012-ers claim that there is another Earth on the other side of the Sun that will break out of orbit and crash into our planet. Another version claims that a planet, larger than Jupiter, lies beyond the orbit of Pluto and will enter the inner solar system, destroying life on Earth. Yet another version tells of a brown dwarf – a stellar companion to the Sun – on a long elliptical orbit that is due to enter the inner solar system on December 21, 2012, wreaking havoc with the planets, affecting Earth's axis, and ripping apart the continents.

The Reality:

As NASA's David Morrison succinctly puts it, "There's nothing out there." Land and space based instruments have vastly improved our ability to spot smaller and smaller near Earth objects. It is true, however, that objects under a kilometer in diameter can still surprise us sometimes.

Asteroid 2011 CQ1 was discovered by the Catalina Sky Survey on February 4 and made a record close Earth approach 14 hours later on February 4 at 19:39 UT (14:39 EST). It passed to within 0.85 Earth radii (5480 km) of the Earth's surface over a region in the mid-Pacific. This object, only about one meter in diameter, is the closest non-impacting object in our asteroid catalog to date.¹⁷

An Earth-size object on a collision course with our planet would have been detected years ago, and in case you're wondering, nothing can 'hide' behind the Sun. A basic understanding of celestial mechanics will show that every object in orbit around the Sun is visible from the viewpoint of every other planet. An object ten times more massive than Jupiter would be visible to the naked eye, and its enormous mass would be disturbing the orbits of several planets. Astronomers monitor planetary orbits in our solar system on a regular basis so any change, no matter how minor, would be immediately detected.

For a brown dwarf, things would be more dramatic. Scientists believe brown dwarfs can range in size 10-to-65 Jupiter masses; beyond that the object is capable of sustaining nuclear fusion at its core and is classified as a star. Brown dwarfs are cooler and darker than stars, but hundreds of them have been detected in the galaxy – none of which are anywhere near our solar system. If the Sun had a brown dwarf companion on a long period orbit there would be evidence of its previous passing. For example, such a massive body traversing the inner solar system could have easily stripped the Moon from the Earth or ejected the small moons of Mars. Tests done on lunar samples show that the Earth and the Moon formed together 4.5 billion years ago, ruling out a stellar companion entering the inner solar system.

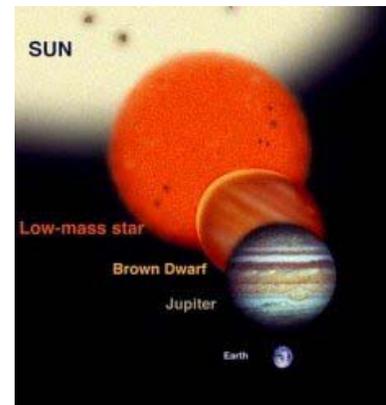
4. The prediction: Supervolcano/Polar Shift

Some are convinced that the Yellowstone supervolcano is going to erupt on December 21, 2012 due to one of the following: 1) an "energy beam" from the center of the galaxy strikes the Earth; 2) the impact or near approach of planet X; or 3) the hyperactive Sun triggers instability in the Earth's core causing a polar shift which in turn triggers the supervolcano.

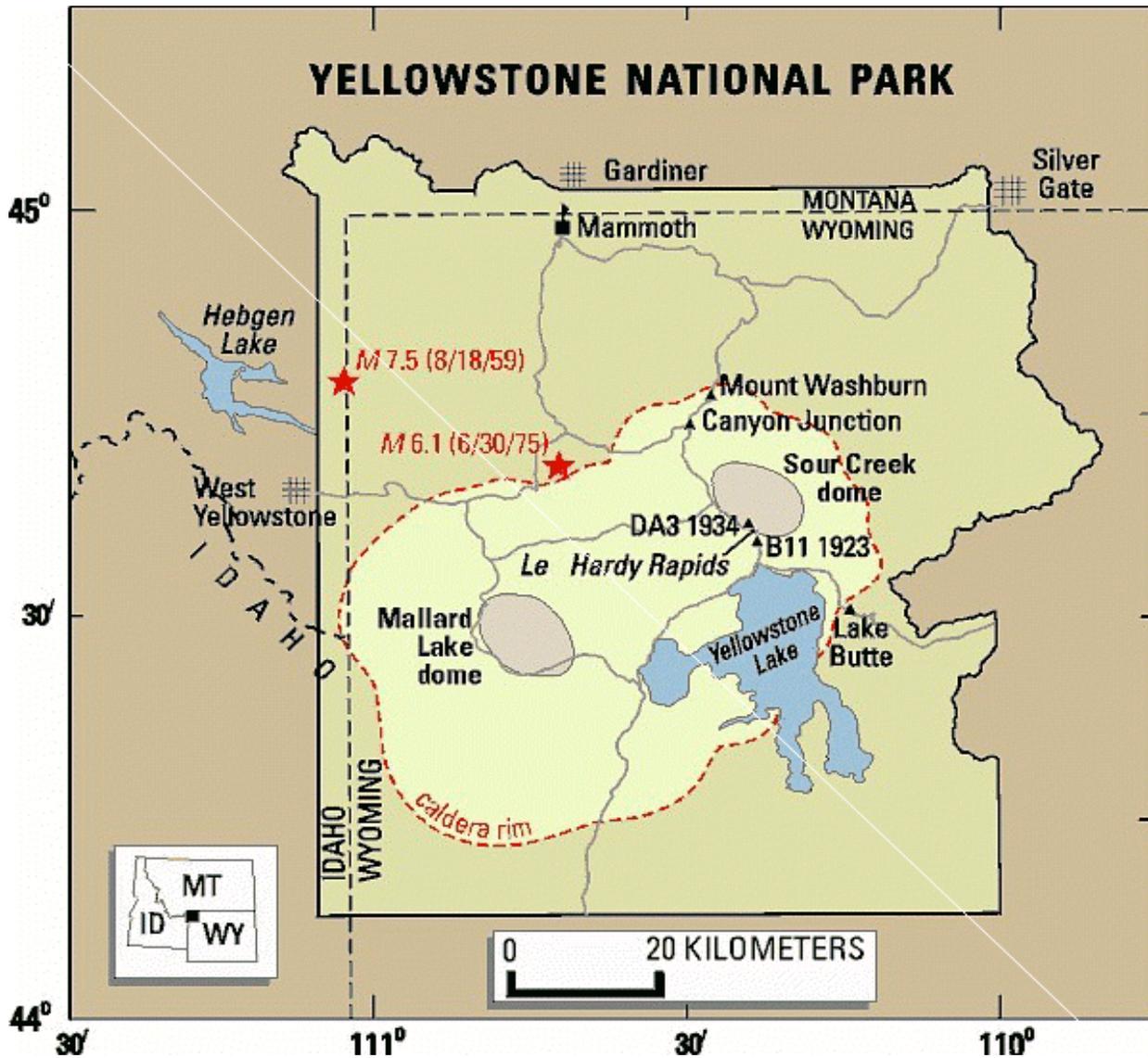
¹⁷ Scientists estimate that there are approximately 100,000 near Earth objects larger than a football field. For more information on these objects, go to this website: <http://neo.jpl.nasa.gov/>.



Artists concept of a large celestial body colliding with the Earth. Scientists believe such an impact was responsible for the formation of our Moon.



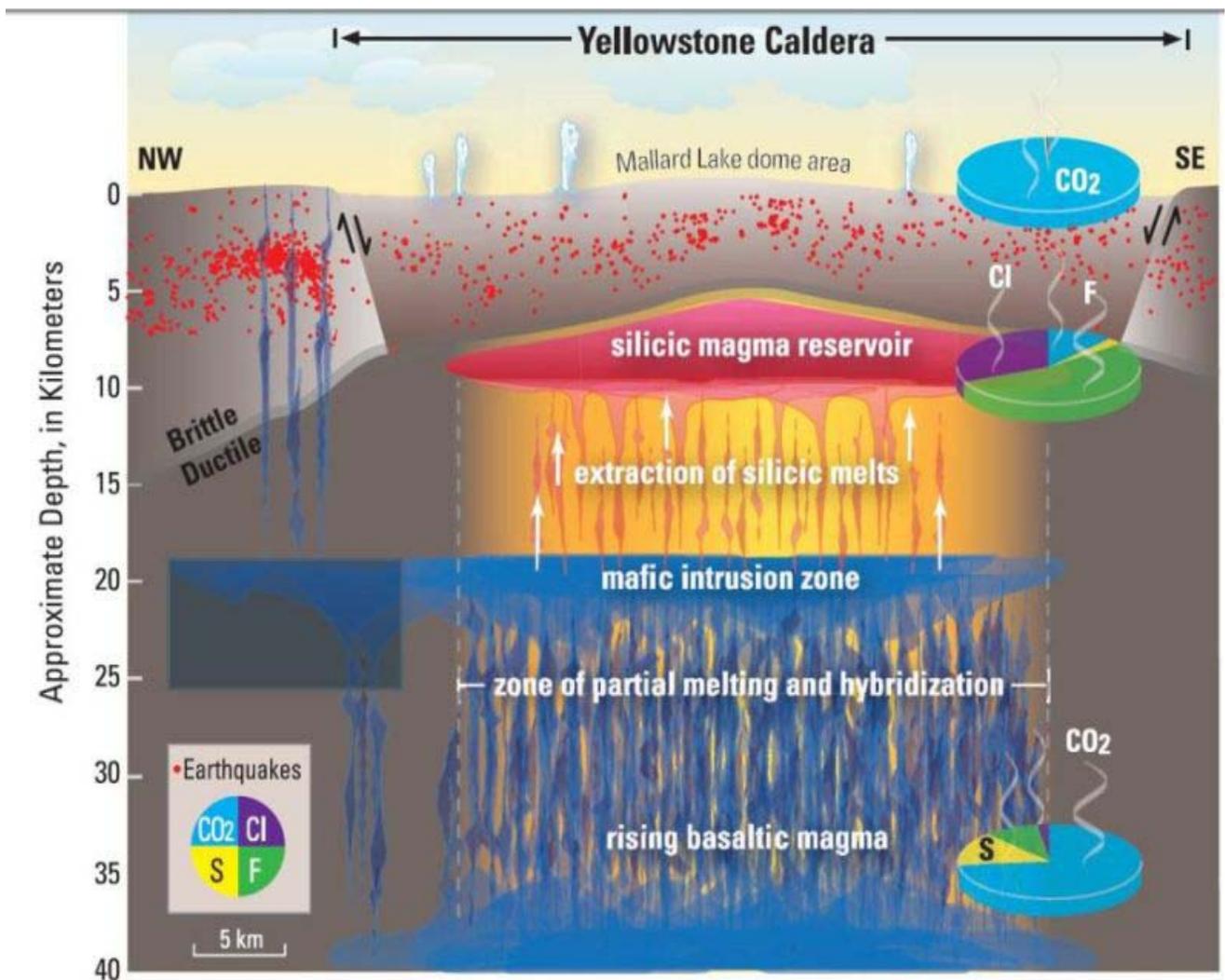
Comparative sizes of various celestial bodies to the Sun



The above map outlines the size of the Yellowstone caldera and associated features.
 Credit: Yellowstone Volcano Observatory

The Reality:

Once again there are two kernels of truth here. The Yellowstone caldera is in fact part of a supervolcano, and polar shift is believed to have happened in the distant past, but not as 2012 writers portray the event. It is worth reviewing the subjects of supervolcanoes and polar shift – polar shift in this case, referring to the geographic poles rather than the geomagnetic poles. The word *supervolcano* has no specifically defined scientific meaning. It was first used by BBC producers in 2000 on the television show HORIZONS, to refer to volcanoes that generate the largest eruptions on Earth. The term captured public attention, and today, even scientists use the term for volcanoes that meet a certain criteria. The Yellowstone supervolcano is one of seven found so far, and the second largest in the world.

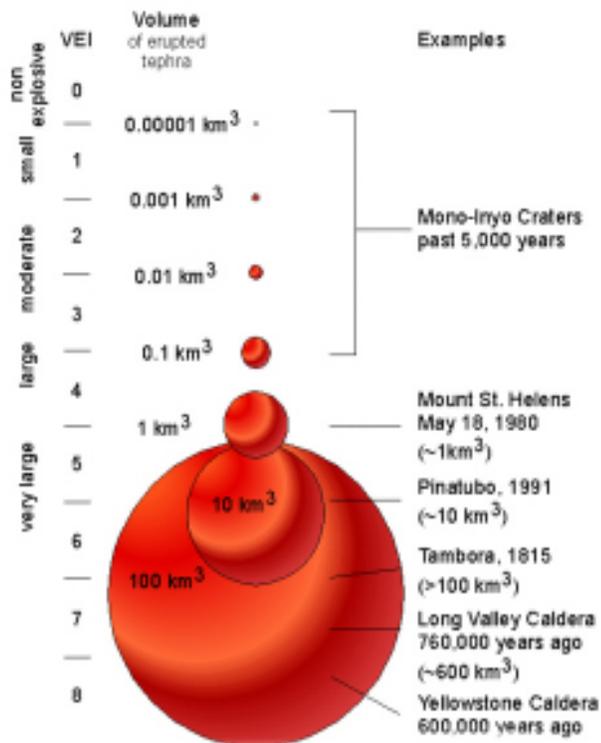


This graphic depicts what's going on below the Yellowstone caldera as magma rises from below melting the rock layers above, creating a magma chamber.
Credit Yellowstone Volcano Observatory

Scientists believe that Yellowstone has a supervolcanic eruption every 600,000 years and has erupted three times in the past 2.1 million years. The last eruption occurred around 630,000 years ago, creating the caldera (large depression or cauldron), that we see today. Since that last event, at least 30 smaller eruptions have produced enough lava and ash to nearly fill up the original caldera. That last eruption, as devastating as it was, was not the largest at Yellowstone; the eruption 2.1 million years ago was twice as strong the most recent event 630,000 years ago. The earlier eruption left a caldera the size of Rhode Island and covered a significant portion of North America under a deep layer of ash and lava.

What makes a volcano a supervolcano? All volcanoes are fueled by molten rock (magma) welling up from the Earth's interior through weak spots in the crust. Most volcanoes occur along the boundary of tectonic plates, but some are created by what are known as 'hot spots'; poorly understood plumes of lava that remain stationary while the crustal plates move over the hot spots.

The islands of Hawaii are the result of one such hot spot, while the caldera of Yellowstone is another. The difference between a volcano and a supervolcano is the size of the magma chamber that forms under the crust, which determines the explosiveness of the eruption and the volume that flows from it. The crater atop Mt. St. Helens was approximately 2 square miles in size; the Yellowstone caldera is 1,500 square miles in size. In 1980 when Mt. St. Helen's exploded it ejected 1.4 billion cubic yards of ash and lava. The last eruption at Yellowstone ejected 8,000 times more than Mt. St. Helen's. The massive release of material from the magma chamber below resulted in the collapse of the ground above the chamber, thereby creating the caldera.



This illustrates the volumes of material expelled by volcanic events ranging from large to small. Missing is the Toba eruption, which expelled 2,800 K cubic meters of material. Credit: Yellowstone Volcano Observatory

Will Yellowstone erupt again? Some type of eruption, possibly a modest one is very probable. What about the chances of a supervolcanic eruption that would kill millions of people? The truth is, we don't know, it could happen in the next century or in the next 100,000 years, or maybe never. We do know that there has never been a supervolcano eruption in the history of human existence (~ 10,000 years), which is probably why humans were able to flourish on the planet. Supervolcanoes are capable of covering vast areas of land, but there is more to those eruptions. A Yellowstone eruption would throw gas and ash up to 20 miles into the atmosphere where winds would circulate them globally, eventually blocking out the Sun and creating what scientists call a 'volcanic winter' lasting from months to years. The subsequent loss of agriculture would lead to mass starvation around the world. Seventy-five thousand years ago, the supervolcano Lake Toba in Sumatra, Indonesia erupted, plunging the Earth into a volcanic winter. Based on studies of human DNA around the world, scientists now believe that eruption and subsequent global winter eradicated sixty percent of our early ancestors. According to Dr. Barry Starr of the

Tech Museum of Innovation, "It's estimated that the Toba volcanic winter lasted anywhere from five-to-ten years, leaving only 1,000 - 10,000 breeding pairs of early humans. The result is that any two people from anywhere in the world are more genetically similar than two chimps from the same troop."

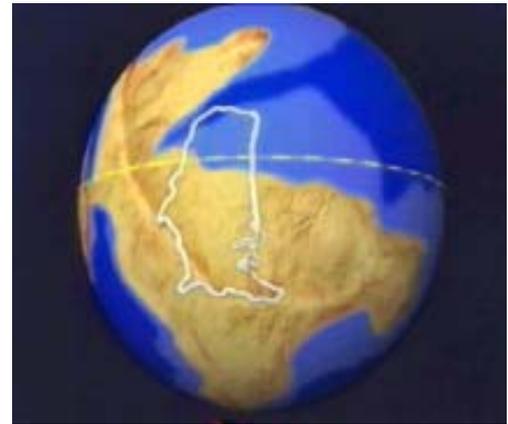
Polar Shift

There is some confusion amongst apocalyptic writers regarding polar shift; some are referring to the magnetic poles while other are referring to the geographic poles, or the spin axis of the planet.¹⁸ For starters the term *polar shift* is a misnomer; the correct term – one that scientists use – is True Polar Wander (TPW). TPW refers to a change in the position of the continents compared to the spin axis.¹⁹ The poles do not change position; the outer crust of the Earth slips with respect the poles. This is possible because the Earth is not a ball of solid rock but a sphere with a thin outer crust that rides over an ocean of liquid rock.

If changes occur in glacial accumulations, or a supercontinent is formed, a mass imbalance is created in the outer shell. Since the Earth is not a perfect sphere (it bulges slightly at the equator), any unbalanced mass will tend to be shifted towards the equator. Scientists believe that during the time of the supercontinent Rodinia,²⁰ the crust shifted approximately forty degrees to align the continent along the equator. The timescale for this crustal slippage is estimated to be hundreds of millions of years. Are we going to experience a TPW event in 2012? **No!** While it is true that glaciers have been melting at an advanced rate recently, these changes are miniscule compared to what it would take to affect the angular momentum of the planet and cause the crust to shift. We will have to wait for the next supercontinent to form – around 200-to-250 million years from now.

More Fly-Paper

There are many other scenarios that have been attached to 2012 doomsday predictions; epidemics, nuclear war, peak oil – the list goes on – but these issues have been around for decades and will



Artist concept of the supercontinent Rodinia with the United States superimposed for scale.

¹⁸ Due to the angular momentum of the Earth, the only way to tilt the spin axis would be an impact with a very large object. It's believed that is what happened to Neptune, whose North Pole points towards the Sun. Neptune is essentially rolling on its equator. Venus likely suffered a similar fate early in the formation of the Solar System. Venus rotates in the opposite direction to all other planets, having been flipped upside down. Immense amounts of energy are required to accomplish this tilting of the spin axis.

¹⁹ This is not the same as continental movement due to plate tectonics, which is responsible for the formation and breakup of supercontinents.

²⁰ The Rodinia supercontinent is believed to have existed 1.1 billion to 750 million years ago. The last supercontinent was Gondwana which broke up slowly between 184 and 30 million years ago, creating the continent arrangement we are familiar with today.

likely be around for decades into the future. Epidemics have ravaged humanity for centuries, and despite the level of modern technology, or perhaps because of it, epidemics will likely reduce populations in the future. The threat of nuclear war has existed since the mid 20th century and is likely to become a larger threat as more and more nations, some with very little to lose, achieve nuclear capability. Strange how our various ideologies have a way of sponging away the basic similarities we all share.

The term 'peak oil' has been bantered about since the 1990's, yet as technology improves, more and more sources of oil are unveiled. Yes, it is true that modern civilization runs on oil, and yes one day the tap will run dry, but never underestimate the power of greed. Oil and its pervasive impact on the world economy will not disappear until every dollar has been wrung from the petroleum reserves of this planet. 'Peak oil' isn't apocalyptic, it's just plain 'ol capitalism at work.

Countdown Timer Anyone?

For those of you interested in this sort of thing, there is an online 2012 Doomsday timer:

[http://
countdown.onlineclock.net/
countdowns/doomsday/](http://countdown.onlineclock.net/countdowns/doomsday/)

Apocalypticism has been around for thousands of years in one form or another. Sometimes it is rooted in theology, other times it has secular roots. What is typical to all versions, however, is the belief that everyone except 'the chosen few' will perish, be it the 'Rapture' in Christianity, Allah's 'day of wrath' (meaning the destruction of Israel), or according to Pinchbeck, only people like him, who have attained an 'elevated level of consciousness' will achieve paradise. That aside, what seems unique to the 2012 doomsday frenzy is how widespread and cross-cultural it has become. Some attribute this to the corrosion of our educational system – the 'dumbing down effect'. During the 20th century we all learned the same basic things – science, math, history, language – a basis from which we could communicate with each other on a level plain. There was a time when referencing a phrase from Shakespeare to make a point would easily be understood by our peers. Not today. The same is true for science, where creationism is replacing evolutionary theory. Today many lack a shared background of information that we can all reference and understand. Sadly when psuedoscience and mysticism prevail, civilization becomes the victim.

When asked about these doomsday predictions, Mayan elders²¹ just shake their heads; they think we're crazy for layering our angst onto their calendar. Archaeoastronomer Anthony Aveni likens the Long Count calendar cycles to our own New Year

²¹Mayan elder Apolinario Chile Pixtun and Mexican archaeologist Guillermo Bernal both note that 'apocalypse' is a Western concept that has little or nothing to do with Mayan beliefs.

period, when the end of one cycle is followed by the beginning of a new cycle. According to Aveni, the Maya weren't much for predictions, "the whole time-keeping scale is very past directed not future directed."

So here's my prediction for December 22, 2012: You'll only have a few Christmas shopping days left, and remember to pay your property taxes. Ignoring either one of these could be unpleasant, in a very personal *doomsday* scenario.

ONLINE RESOURCES:

Bad Astronomy:

<http://www.badastronomy.com>

2012 Hoax:

<http://2012hoax.org>

No Planet X:

spider.ipac.caltech.edu/staff/tchester/iras/no_tenth_planet_yet.html

Sky and Telescope article:

<http://media.skyandtelescope.com/documents/Doomsday2012.pdf>

Not The End Of The World:

<http://www.famsi.org/research/vanstone/2012/index.html>

Universe Today:

<http://www.universetoday.com/15167/2012-planet-x-is-not-nibiru/>

Ask An Astrobiologist:

<http://astrobiology.nasa.gov/ask-an-astrobiologist/intro/>

The Griffith Observatory:

<http://www.griffithobs.org/exhibits/special/2012.html>

The Astronomical Insignificance of the Maya Date 31.0.0.0:

<http://www.scribd.com/doc/18959165/The-Astronomical-Insignificance-of-Maya-Date-13000-by-Vincent-H-Malmstrom>

True Polar Wander and Supercontinents:

<http://www.sciencedirect.com/science/article/pii/S004019510200642X>
...and...

<http://www.sciencedirect.com/science/article/pii/S0012821X98000314>

The 2012 Phenomenon: A historical and typological approach to a modern apocalyptic mythology.

<http://skepsis.no/?p=599>