

# Mexico



Osher course, February 2021

J. N. Hooker



# Map of Mexico



# Photo Album

Maya pyramid at  
Chichen Itzá



# Photo Album

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Olmec  
head



# Photo Album

Teotihuacán



# Aztec Religion

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*Teca papaqui; teca  
huehuetzcatica,  
tetennecuilhuitica in  
tlalticpac, amo  
tle nelli;  
auh amo nelli in quitoa,  
in quitenehua: zan  
tetennecuilhuitica.*

They mock the people on earth. They are happy at the mishaps of men; they make fun of the people on earth. Nothing is true. Nothing they express, nothing they say, nothing they reveal to the people is true: they are only deceiving the people.

# Photo Album

- Large Nahuatl, Maya, and Zapotec-speaking populations
  - Descendants of Aztecs, Maya, and Zapoteca
    - Words from Nahuatl: avocado, chili, chocolate, coyote, guacamole, tamale, tomato



Nahuatl-speaking man  
from Cuetzalan, near  
Puebla



# Photo Album

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México  
D.F.

Population  
8.8 million



# Photo Album

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View of  
El Zócalo  
in  
México  
D.F.

...and  
volcanos  
in the  
distance



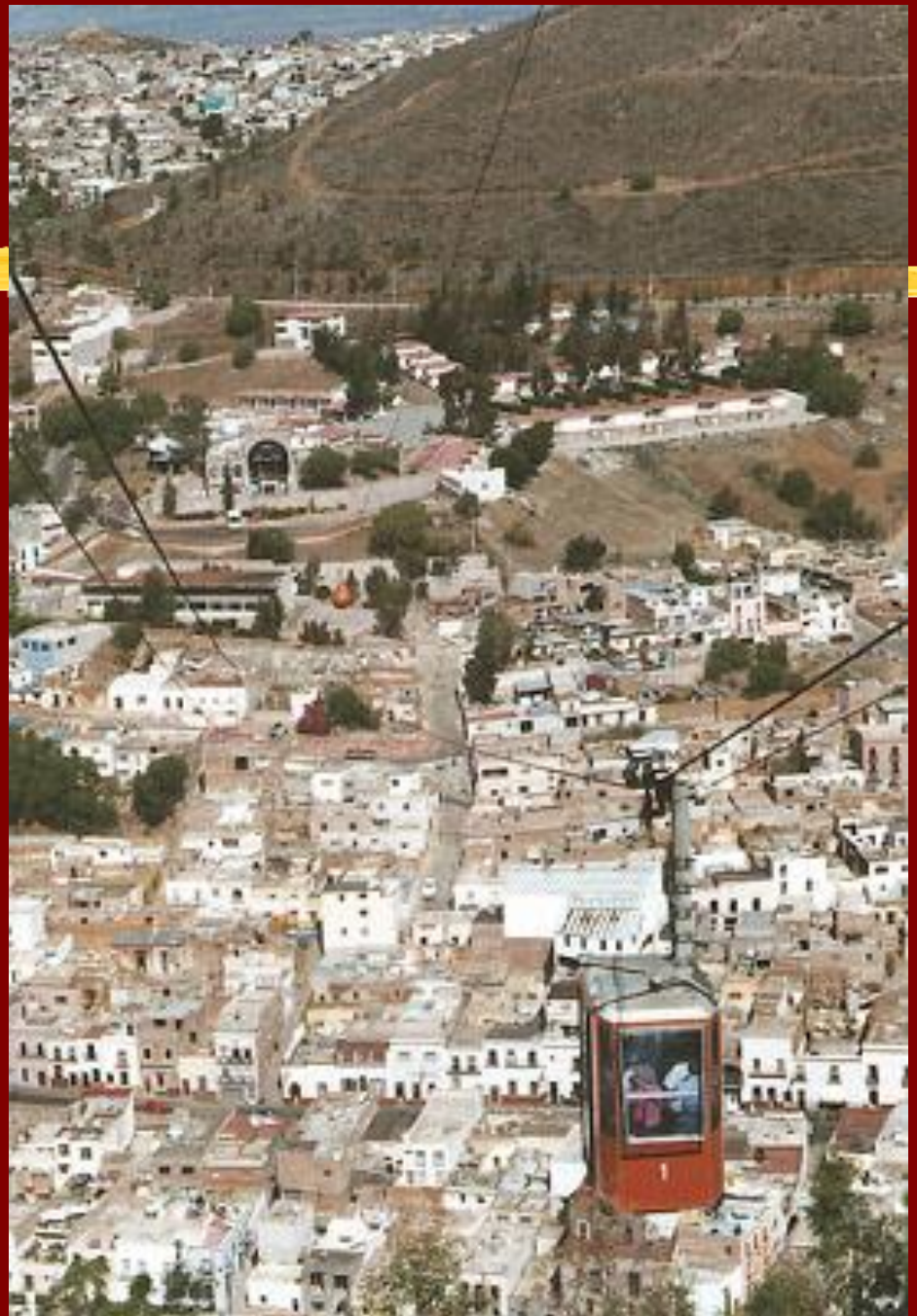
# Photo Album



La Catedral Metropolitana, México D.F.

# Photo Album

Zacatecas



# Photo Album

Oaxaca



# Photo Album

Dia de los  
Muertos

Oct 31-Nov 2



# Economic background

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- World's 11th largest economy (in PPP).
  - Larger than Canada's.
  - 2<sup>nd</sup> largest in Latin America, after Brazil.

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  - Carlos Slim was richest man in the world 2010-2013
    - Head of Grupo Carso.
  - Largest employers
    - FEMSA 220,000
    - Wal-Mart 196,000





# Politics

- Andrés Manuel López Obrador took office as President in December 2018.
  - Member of historical PRI (Partido Revolucionario Institucional).
  - Former head of Federal District



# Crime

- Drug-related violence in **some** areas.
  - Cartels fight for control of drug traffic .
- Main threat is everyday crime.
  - As in Mexico City



# History

- History marked by instability and violence.
  - Spanish *conquistadores* exploited rivalry between Aztecs and subjugated people, brought disease.
  - 300-year encomienda system oppressed indigenous people.
  - Legacy visible in drug violence today.



Hernán Cortés

# History

- Political turmoil.
  - Independence from Spain in 1821
  - 25 presidents in next 28 years
  - Santa Anna became president 11 times.
  - French rule 1864-76.



Antonio López de  
Santa Anna








# Mexican Territorial Loss

## TERRITORIAL GROWTH

### COLONIAL PERIOD: 1775

-  Original Thirteen Colonies
-  Other British territories

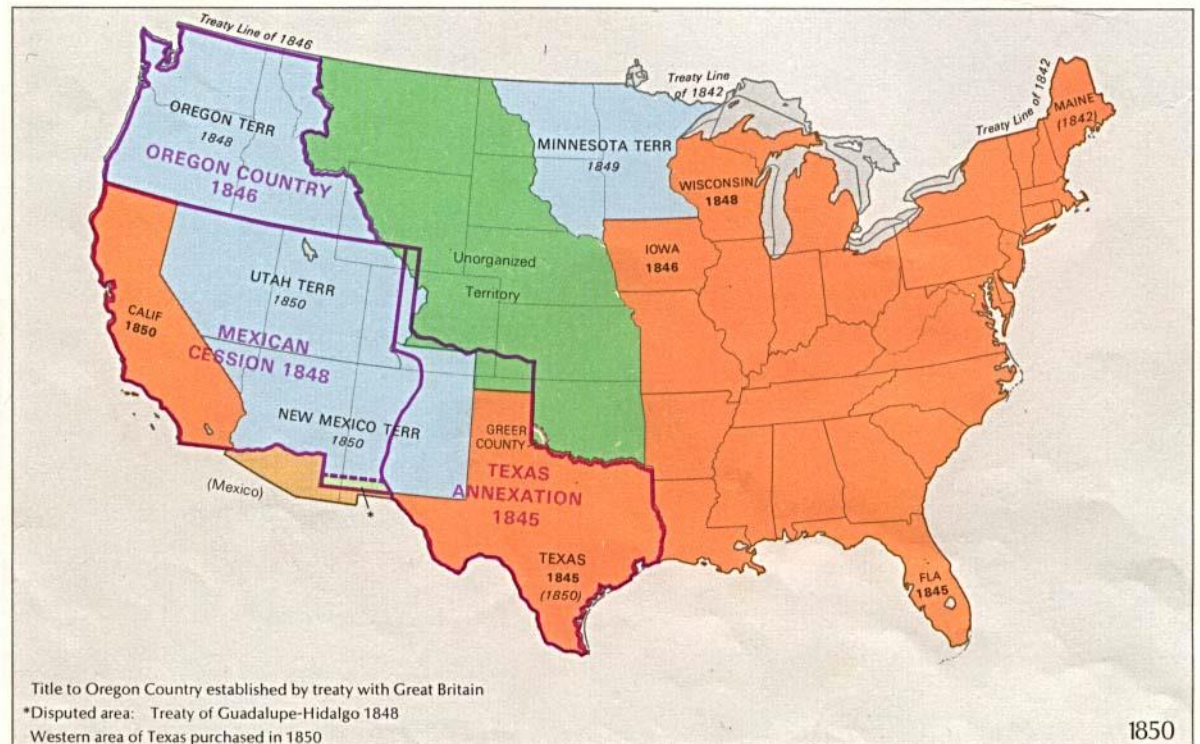
### UNITED STATES: 1790–1920

-  States
-  State claims
-  Special status areas
-  Territories
-  Unorganized territories
-  Claimed areas
-  Foreign areas

- 1803** Dates of territorial acquisitions
- 1805** Dates of initial territorial organization
- (1809)** Dates of latest change within given time period
- 1812** Dates of admission to the Union

Map scale 1:34,000,000

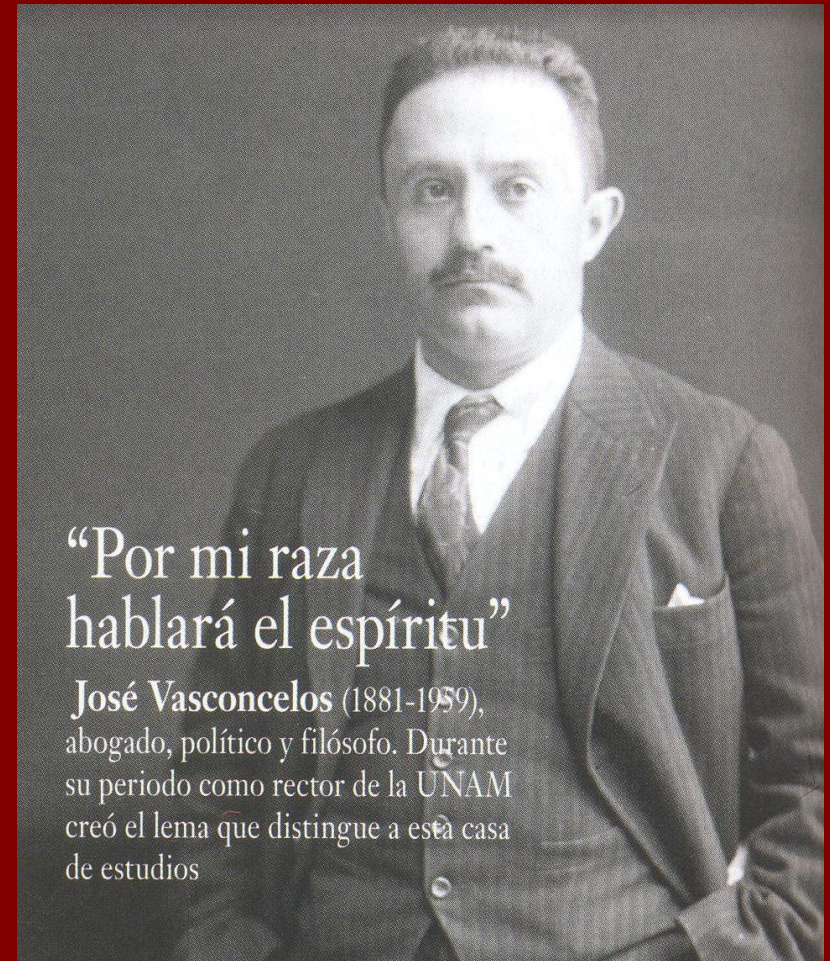
Compiled by H. George Stoll, Hammond Incorporated, 1967;  
rev. by U.S. Geological Survey, 1970



1850

# History

- A *mestizo* culture.
  - A people of mixed European/indigenous ancestry.
  - Differs from U.S. concept of race.
  - *Mestizos* can belong to upper classes.
  - Concept of *La Raza Cómica* from 1920s.



“Por mi raza  
hablará el espíritu”

José Vasconcelos (1881-1959),  
abogado, político y filósofo. Durante  
su periodo como rector de la UNAM  
creó el lema que distingue a esta casa  
de estudios

# Cultural Background

- Westerners created an environment too unstable for their own rule-based culture to survive.
  - The culture remains polychronic.



Mexico City street scene

# Cultural Background

- High-context
  - Indirect communication historically increased safety.
  - Mexicans are good at reading body language.





# Cultural Background

- High-context
  - Indirect communication historically increased safety.
  - Mexicans are good at reading body language.
- High power distance.



# Cultural Background

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- High uncertainty-avoidance
  - Legacy of Aztecs
  - Bureaucracy as ritual.
    - Western bureaucracy runs things.
    - Mexican bureaucracy provides sense of security.



Moctezuma II

# Cultural Background

- Strong religious belief
  - especially among lower classes and indigenous people.
  - Manages the stress of a tumultuous history.
  - Importance of symbol vs. image.



Catedral de Oaxaca

# Cultural Background



Our Lady of  
Guadalupe

Appeared to  
Juan Diego,  
1531

Example of  
syncretism



# Cultural Background



Pilgrimage to  
Basilica of  
Guadalupe,  
Mexico City

# Cultural Background

- Emotionally intense.
  - Dionysian culture
  - Holy Week observance.
  - Displays of affection.
  - Noisy parties, festivals, singing, etc.



Stages of the Cross

# First Meeting

- First order of business is to build a relationship, not to do business.
  - You may get a tour of archeological sites.



Monte Alban, near Oaxaca

# First Meeting

---

- Don't take offense if you are kept waiting
  - or another activity is scheduled at the same time.
  - Family matters may take precedence.
  - But be on time, just in case.
    - *Hora Americana vs. hora Mexicana.*





# First Meeting

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- Don't take offense if you are kept waiting
  - or another activity is scheduled at the same time.
  - Family matters may take precedence.
  - But be on time, just in case.
    - *Hora Americana vs. hora Mexicana.*
- Use titles (e.g. *Lic.* or *Licenciado*) and formal address.

# Names

*Address as:*  
Señor Rodríguez

Carlos  
Rodríguez  
Vargas

*Address as:*  
Señora Gonzáles

Ana María  
Gonzáles  
Fuentes

Jesús  
Rodríguez  
Gonzales



# Names

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Jesús  
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*Or:* Carlos Rodríguez V.

# Names

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Gonzales

*Old fashioned:*  
Ana María Gonzáles  
de Rodríguez  
= Señora de Rodríguez

# Names

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Gonzales

*Conventions vary in  
other Hispanic countries.*

# Language

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- OK to speak English.
  - But apologize for your inability to speak Spanish.
  - If you know some Spanish, use it.



# Relationships

- Much relationship-building is done in restaurants.
  - Lunch is leisurely.
  - What to talk about?  
*La familia!*



Mariachi musicians

# Relationships

This is not  
*machismo*





# Relationships

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- *Machismo* is important in Mexico
  - Arab origins, but it has evolved
  - Men can express emotion and ask for help.
  - *Machismo* in upper class entails fine sense of honor and devotion to family.
  - *Machismo* in lower class may entail violence.
  - *Machismo* is a way that men in a traditionally violent society can take control of their lives.



# Mayan Mathematics



# Mayan Mathematics

- The Maya developed sophisticated mathematics 2000 years ago to measure time.

Chichén  
Itsá



# Mayan Mathematics



- Calendars:
  - Sacred calendar (*tolzin*) = 260 days
  - “Solar” calendar = 365 days
  - Calendar round = Sacred + Solar = 18,980 days
  - Long Count calendar = 1,872,000 days

# Mayan Mathematics

- Sacred calendar (*tolzin*)
  - 13-day cycle (including good days and bad days)
  - 20-day cycle (corresponding to 20 gods)

260-day  
sacred  
calendar



# Mayan Mathematics

- Sacred calendar (*tolzin*)
  - The days aren't just numbers.
  - They are gods.
  - The cycles run in parallel.
  - Because 13 and 20 are mutually prime, the calendar repeats after  $13 \cdot 20 = 260$  days.



Imix, god  
corresponding  
to number 1

# Mayan Mathematics



- “Solar” calendar (*haab*)
  - 20-day cycle, denoted by numerals (base 20 number system)
  - 18-day cycle, corresponding to 18 gods.



# Mayan Mathematics

- “Solar” calendar (*haab*)
  - Calendar consists of 18 cycles of 20 = 360 days.
  - 5 residual days added at the end
  - Total of 365 days.



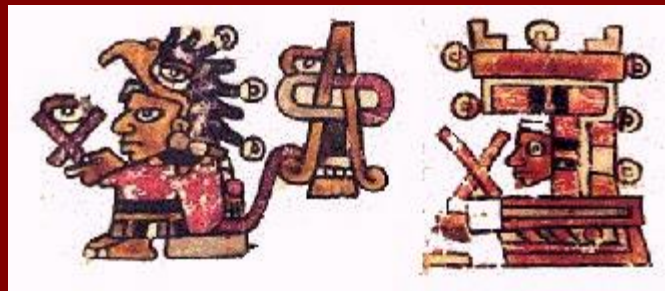
# Mayan Mathematics

- “Solar” calendar (*haab*)
  - Maya observed that 1507 solar years = 1508 cycles of the “solar” calendar.



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  - This implies 365.24200 days/year, compared with modern value of 365.24198 (0.000005% error).



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- “Solar” calendar (*haab*)
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  - This implies 365.24200 days/year, compared with modern value of 365.24198 (0.000005% error).
  - Compare with 365.2475 days in Gregorian calendar, developed 15 centuries later in Europe (0.0015% error).



# Mayan Mathematics



- Calendar Round
  - Sacred calendar (260 days) + Solar calendar (365 days) run in parallel
  - Duration = least common multiple of 260 and 365 = 18,980 days (about 52 years)

# Mayan Mathematics



- Time between two Calendar Round dates
  - The Maya solved this problem routinely.





# Mayan Mathematics



- Time between two Calendar Round dates
  - The Maya solved this problem routinely.
  - This requires the Chinese Remainder Theorem, discovered in the West by Carl F. Gauss in 1801.
  - Discovered by Chinese in 13<sup>th</sup> century.
  - Maya knew the theorem 1200 years before the Chinese.

# Mayan Mathematics

- Long Count calendar
  - Base 20 number system
  - 3<sup>rd</sup> position is base 18
  - Uses zero (also introduced by Jains in India about the same time)

0	1	2	3	4
	•	••	•••	••••
5	6	7	8	9
	•	••	•••	••••
10	11	12	13	14
	•	••	•••	••••
15	16	17	18	19
	•	••	•••	••••

Mayan  
numerals



# Mayan Mathematics

- Long Count calendar
  - Base 20 number system
  - 3<sup>rd</sup> position is base 18
  - Uses zero (also introduced by Jains in India about the same time)
  - For example, date 9.0.19.2.4 =

$$9 \cdot 18 \cdot 20^3 + 0 \cdot 18 \cdot 20^2 + 19 \cdot 18 \cdot 20 + 2 \cdot 20 + 4$$



9 *baktuns*



0 *katuns*



19 *tuns*



2 *uinals*



4 days

# Mayan Mathematics



- Long count calendar:
  - Great Cycle is 13 *baktuns*  
=  $13 \cdot 18 \cdot 20^3 = 1,872,000$  days  
(about 5125.36 years)

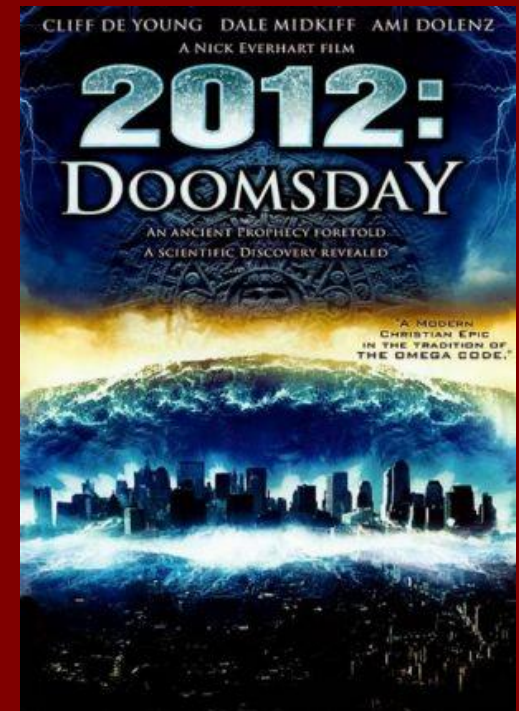
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4.20, 8.18 = 11 Aug 3114 BCE on Gregorian  
Calendar

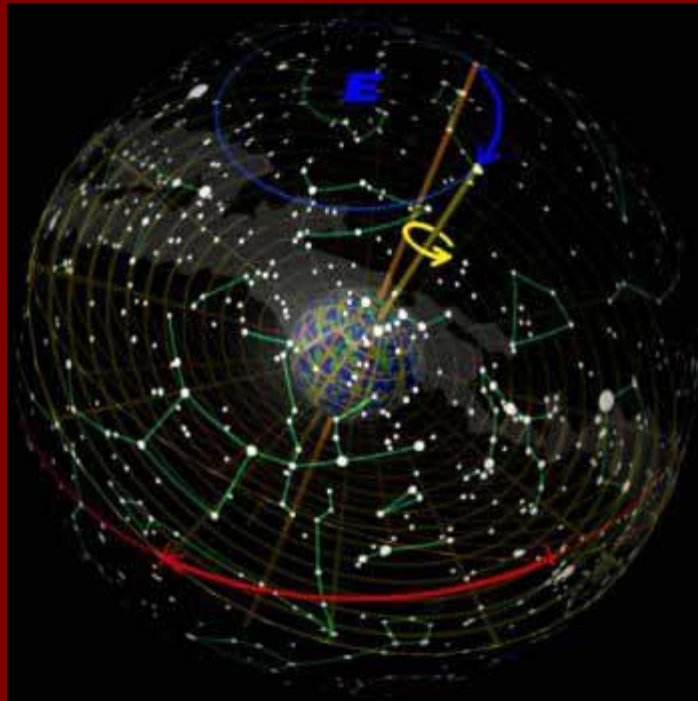
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Calendar
    - Last day of previous Great Cycle was  
**21 Dec 2012 CE.**



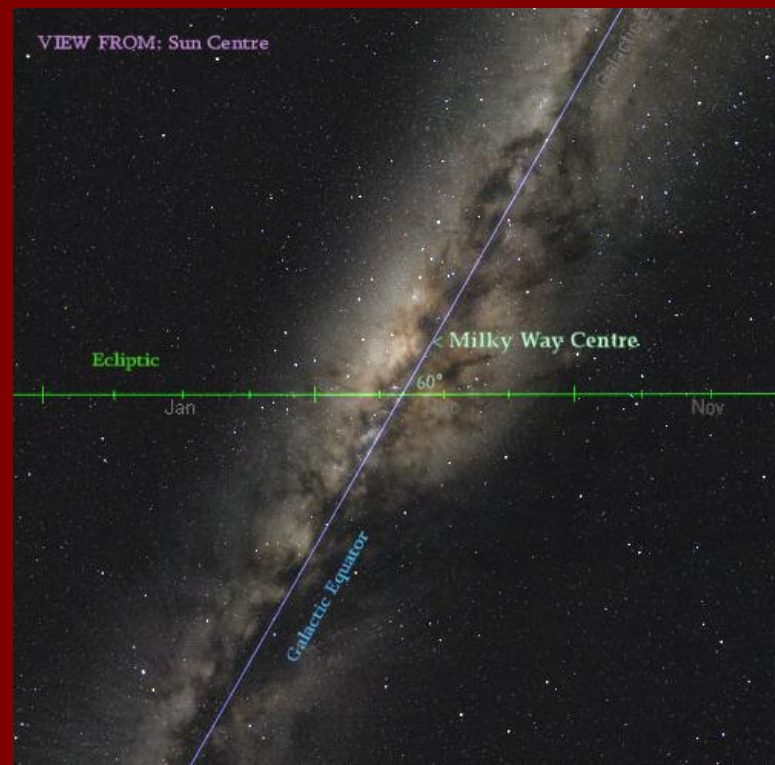
# Mayan Mathematics

- Precession of the equinoxes
  - Earth's axis wobbles once about every 25,700 years.



# Mayan Mathematics

- Precession of the equinoxes
  - The sun's path (ecliptic) crosses the equatorial plane of the Milky Way at about a  $60^\circ$  angle.



# Mayan Mathematics



- Precession of the equinoxes
  - Due to precession, the sun aligned with the galactic equator at sunrise on the winter solstice in 2012, or thereabouts.
    - Hard to define observationally exactly what the galactic equator is.

# Mayan Mathematics



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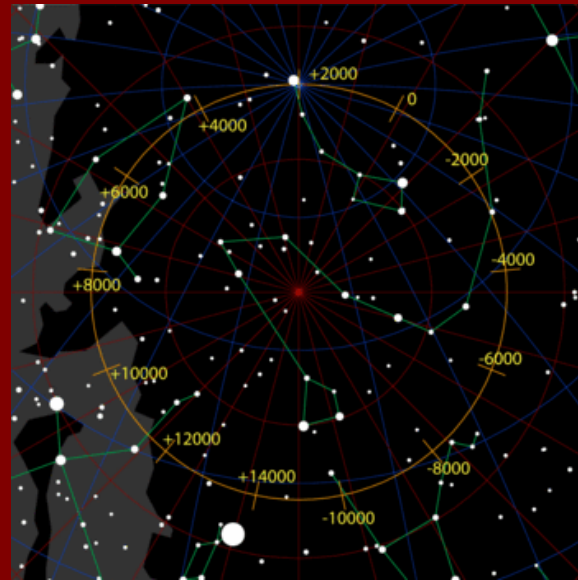
# Mayan Mathematics



- Precession of the equinoxes
  - Due to precession, the sun aligned with the galactic equator at sunrise on the winter solstice in 2012, or thereabouts.
    - Hard to define observationally exactly what the galactic equator is.
  - **21 Dec 2012** was the winter solstice.
  - It is hypothesized that the Maya fixed the end of the Great Cycle to this date.
    - Maya were very interested in the Milky Way.

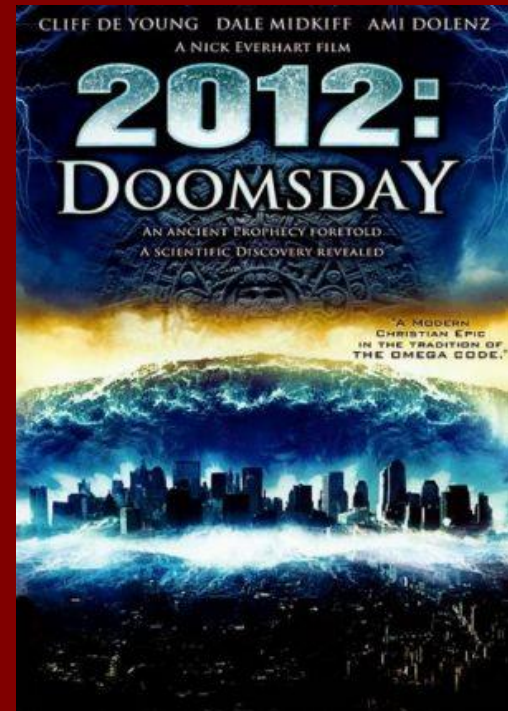
# Mayan Mathematics

- Precession of the equinoxes
  - The period of the precession (approx. 25,700 years) is close to 5 Great Cycles (25,627 years).
  - The period varies slightly as the moon recedes from the earth.



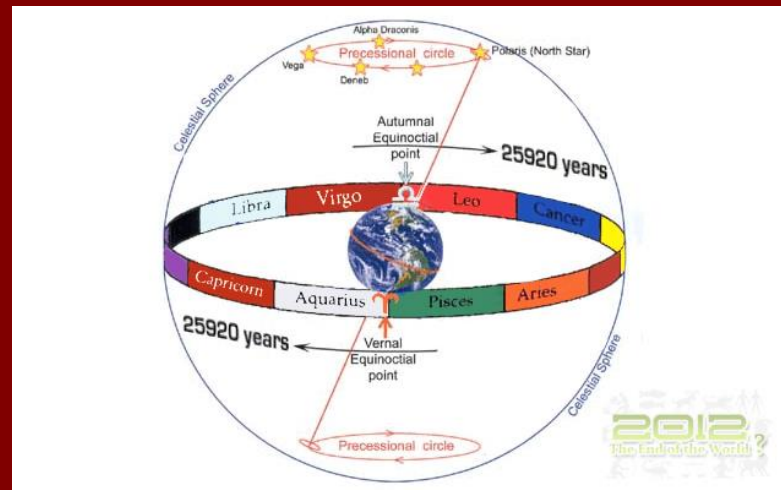
# Mayan Mathematics

- Why preoccupation with time?
- Did Maya predict end of the world?



# Mayan Mathematics

- We don't know Maya interpretation of end of the Great Cycle.
  - No reason to believe they predicted doomsday.
  - Some inscriptions bear dates beyond 21 Dec 2012.



# Mayan Mathematics

- Knowledge of the future relieves uncertainty.
  - Each day controlled by known gods.
  - Mayan society was highly stressed.
    - Resource depletion and resulting warfare.



# The Rest of Latin America



# The Rest of Latin America

