

**How Many Planets in Our
Solar System?**

Glad You Asked

1930 - 2006

My



Mein

Very



Vater

Eager/
Energetic/
Educated/



Erklärt

Mother



Mir

Just



Jeden

Served



Sonntag

Us



Unsere

Nine











Neun

Pumpkins/
Pies/
Pizzas



Planeten

since 2006

My	Very	Educated	Mother	Just	Served	Us	Nachos
							
Mit	Vergnügen	Erklärt	Mama	Jeden	Sonntag	Unseren	Nacht- himmel

Do You Even Planet?



Screenshot: Stellarium



Screenshot: Stellarium

Moon

Mercury

Venus

Sun

Mars

Jupiter

Saturn

7

Antiquity & Middle Ages

WIKIPEDIA The Free Encyclopedia

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Flat Earth

50 languages

Contents hide

Article Talk

Read View source View history

From Wikipedia, the free encyclopedia

This article is about modern-day beliefs. For the Middle Ages belief in a flat Earth, see Flat Earth (disambiguation).

Contents hide

(Top)

- Historical beliefs in a flat Earth, rise of the spherical Earth model
- 19th and early 20th centuries
- International Flat Earth Research Society
 - Criticism
 - Decline and relaunch
- Per country
 - Canada
 - Relaunch
 - Italy
- Internet-era resurgence
 - Sociological explanations for counterfactual beliefs
 - Beliefs
 - Social and experimental activities of skeptics and believers
 - Mike Hughes
 - Social consequences and responses

Flat Earth is an scientifically disproven conception of the shape as a plane. It is an ancient culture that has had a resurgence in the 19th and early 20th centuries. The idea of a spherical Earth appeared in ancient philosophy with Pythagoras (6th century BC).

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Myth of the flat Earth

15 languages

Contents hide

Article Talk

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From Wikipedia, the free encyclopedia

This article is about the misconception that medieval scholars held of the flat Earth. For actual flat Earth cosmologies, see Flat Earth (disambiguation).

Myth of the flat Earth is a cultural phenomenon that occurred during the Middle Ages. It is a historical phenomenon that occurred during the Middle Ages.

Modern flat Earth beliefs

6 languages

Article Talk

Read View source View history

From Wikipedia, the free encyclopedia

This article is about modern-day beliefs that the Earth is flat. For similar topics, see Flat Earth (disambiguation).

Beliefs that the Earth is flat, contrary to over two millennia of scientific consensus that it is roughly spherical,^[3] are promoted by a number of organizations and individuals. Such beliefs are pseudoscience; the hypotheses and assertions are not based on scientific knowledge. Flat Earth advocates are classified by experts in philosophy and physics as science deniers.^{[4][5]}

Flat Earth groups of the modern era date from the middle of the 20th century; some adherents are serious and some are not. Those who are serious are often motivated by religion^[6] or conspiracy theories.^[7] Through the use of social media, flat Earth theories have been increasingly espoused



Projections of the sphere like the azimuthal equidistant projection have been co-opted as images of the flat Earth model depicting Antarctica as an ice wall^{[1][2]} surrounding a disk-shaped Earth.



The famous "Flat Earth" Flammarion engraving originates with Flammarion's 1888 *L'atmosphère: météorologie populaire* (p. 163).

The belief was widespread in the Greek world when Eratosthenes calculated the circumference of Earth around 240 BC. Knowledge spread with Greek influence such that by the Middle Ages (~600–1000 AD), most European scholars espoused Earth's sphericity.^[3] Belief among educated Europeans was almost nonexistent from the Middle Ages onward, though fanciful depictions such as the exterior panels of Hieronymus Bosch's *The Garden of Earthly Delights*, in which a disc is shown floating inside a transparent sphere.^[4]



Moon



Mercury



Venus



Sun



Mars



Jupiter

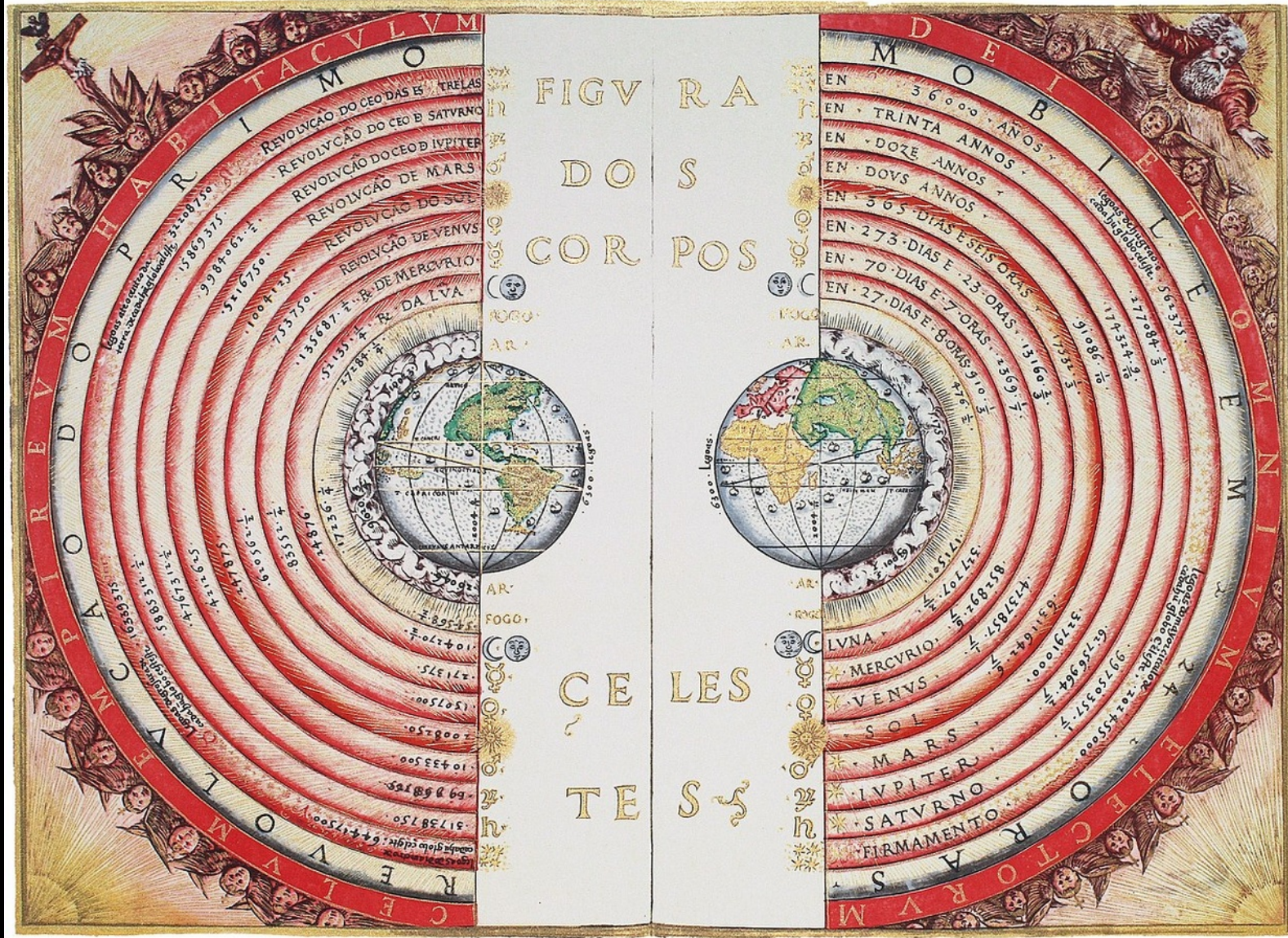


Saturn

7

Antiquity &
Middle Ages

Wikimedia Commons:
Bartolomeu_Velho_1568FXD.jpg





Moon



Mercury



Venus



Sun



Mars



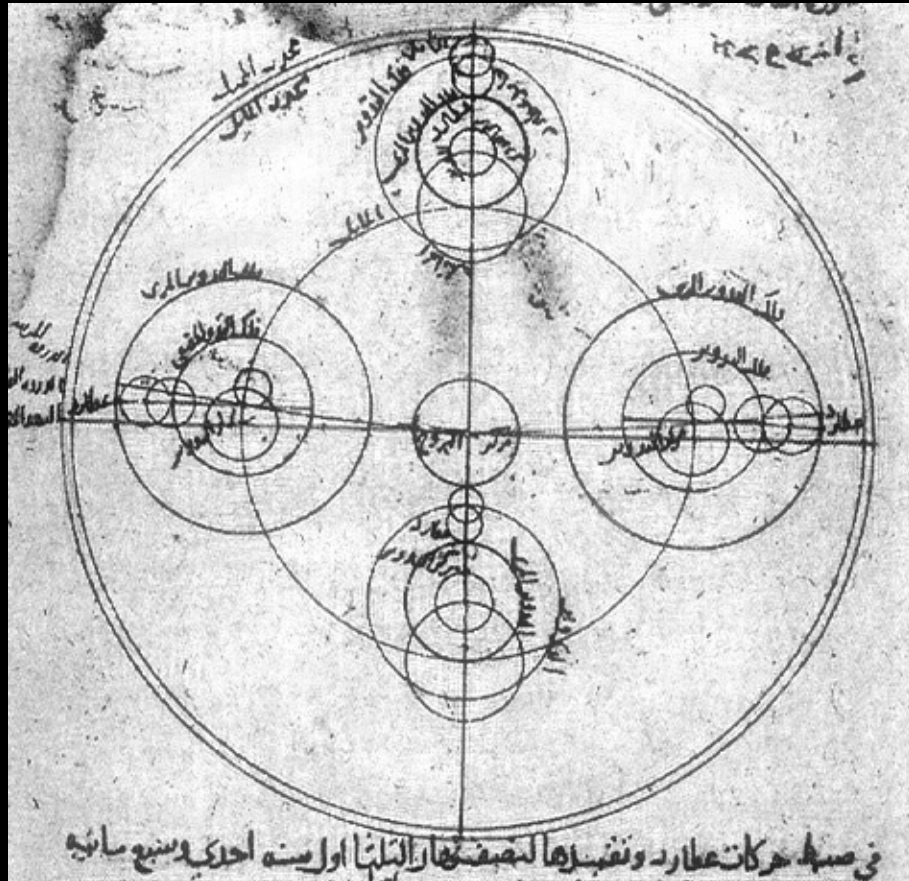
Jupiter



Saturn

7

Antiquity &
Middle Ages



1st Revolution: The Center

The Heliocentric System

 Mercury

 Venus

 Earth

 Mars

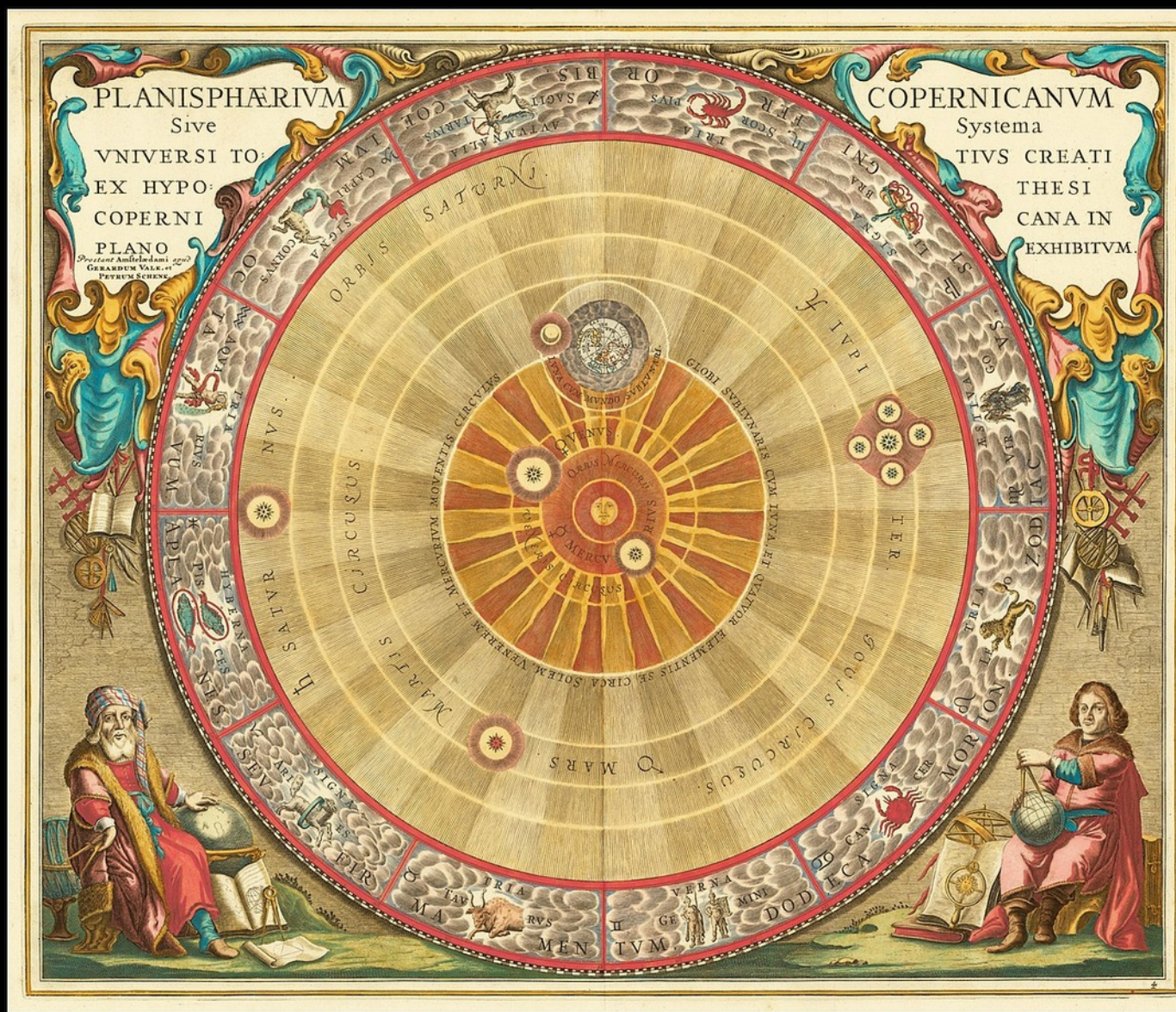
 Jupiter

 Saturn

ca. 1550/1650

- 1781

6



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1660_Copernican_astronomical_chart_in_the
form_of_the_concentric_circles.jpg

 Mercury

 Venus

 Earth

 Mars

 Jupiter

 Saturn

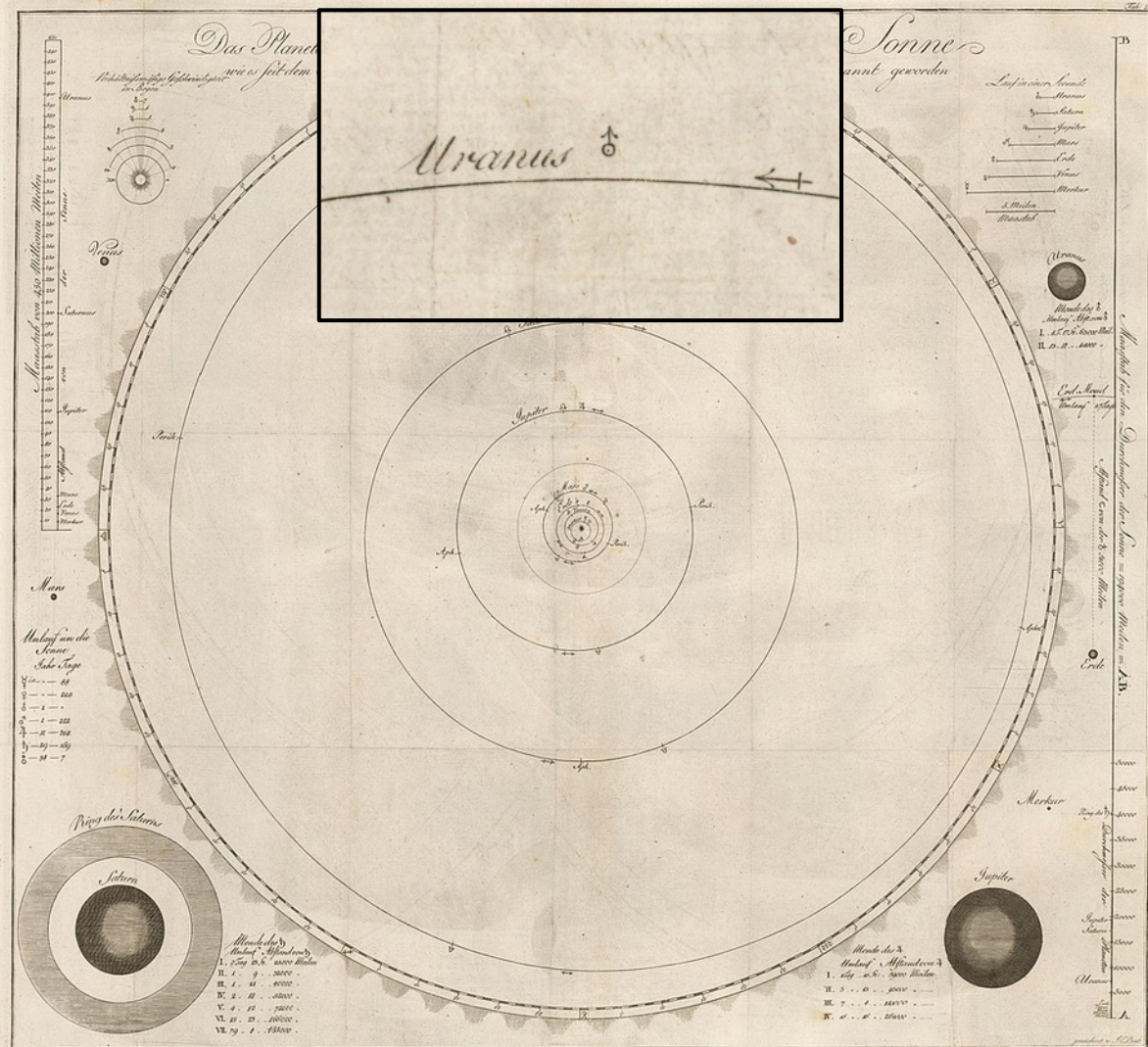
 Uranus

7

1781 – 1801

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Das Planeten System der Sonne wie es seit dem Jahr 1781 bekannt geworden.jpg



2nd Revolution: The Inner Solar System

The Asteroids



 Mercury

 Venus

 Earth

 Mars

??????????

 Jupiter

 Saturn

 Uranus

7

1781 – 1801



Wikimedia Commons:
Das Planeten System der Sonne wie es
seit dem Jahr 1781 bekannt geworden.jpg

Titius–Bode “law” (ca. 1700 – 1850)

 Mercury
 Venus
 Earth
 Mars

7

??????????

 Jupiter
 Saturn
 Uranus


1781 – 1801

$$\frac{a}{1 \text{ AU}} = \frac{4}{10} + \frac{3}{10} \cdot 2^n$$

$$n = -\infty, 0, 1, 2, 3, 4, 5, 6$$

n	T-B rule distance (AU)	Planet	Semimajor axis (AU)	Deviation from prediction
$-\infty$	0.4	Mercury	0.39	-3.23%
0	0.7	Venus	0.72	+3.33%
1	1.0	Earth	1.00	0.00%
2	1.6	Mars	1.52	-4.77%
3	2.8			
4	5.2	Jupiter	5.20	+0.05%
5	10.0	Saturn	9.58	-4.42%
6	19.6	Uranus	19.22	-1.95%

fsck the Himmelpolizey

	Mercury
	Venus
	Earth
	Mars
	Ceres
	Jupiter
	Saturn
	Uranus
1801	

8



Titius–Bode “law” (ca. 1700 – 1850)

$$\frac{a}{1 \text{ AU}} = \frac{4}{10} + \frac{3}{10} \cdot 2^n$$

$$n = -\infty, 0, 1, 2, 3, 4, 5, 6$$

 Mercury

 Venus

 Earth

 Mars

 Ceres

 Jupiter

 Saturn

 Uranus

8

1801

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4	5.2	Jupiter	5.20	+0.05%
5	10.0	Saturn	9.58	-4.42%
6	19.6	Uranus	19.22	-1.95%

 Mercury

 Venus

 Earth

 Mars

 Ceres

 Pallas

 Juno

 Vesta

 Jupiter

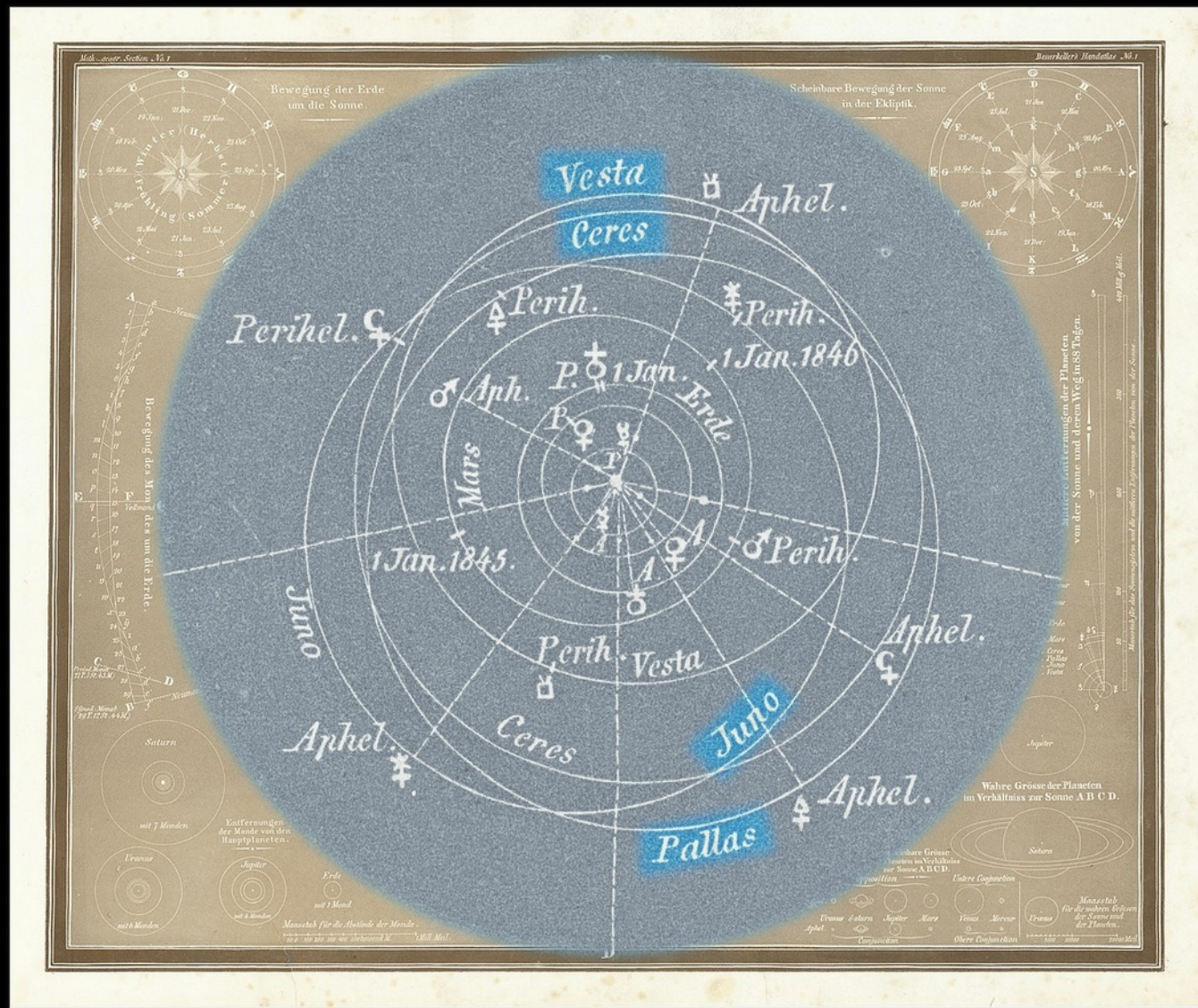
 Saturn

 Uranus

11

1807 – 1845

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Das Planeten%3DSystem_Nach_v_Liffrow_Mulder_u_A_Bearbeitet_von_L_Eward_1845.jpg00



 Mercury

 Venus

 Earth

 Mars

 Ceres

 Pallas

 Juno

 Vesta

 Jupiter

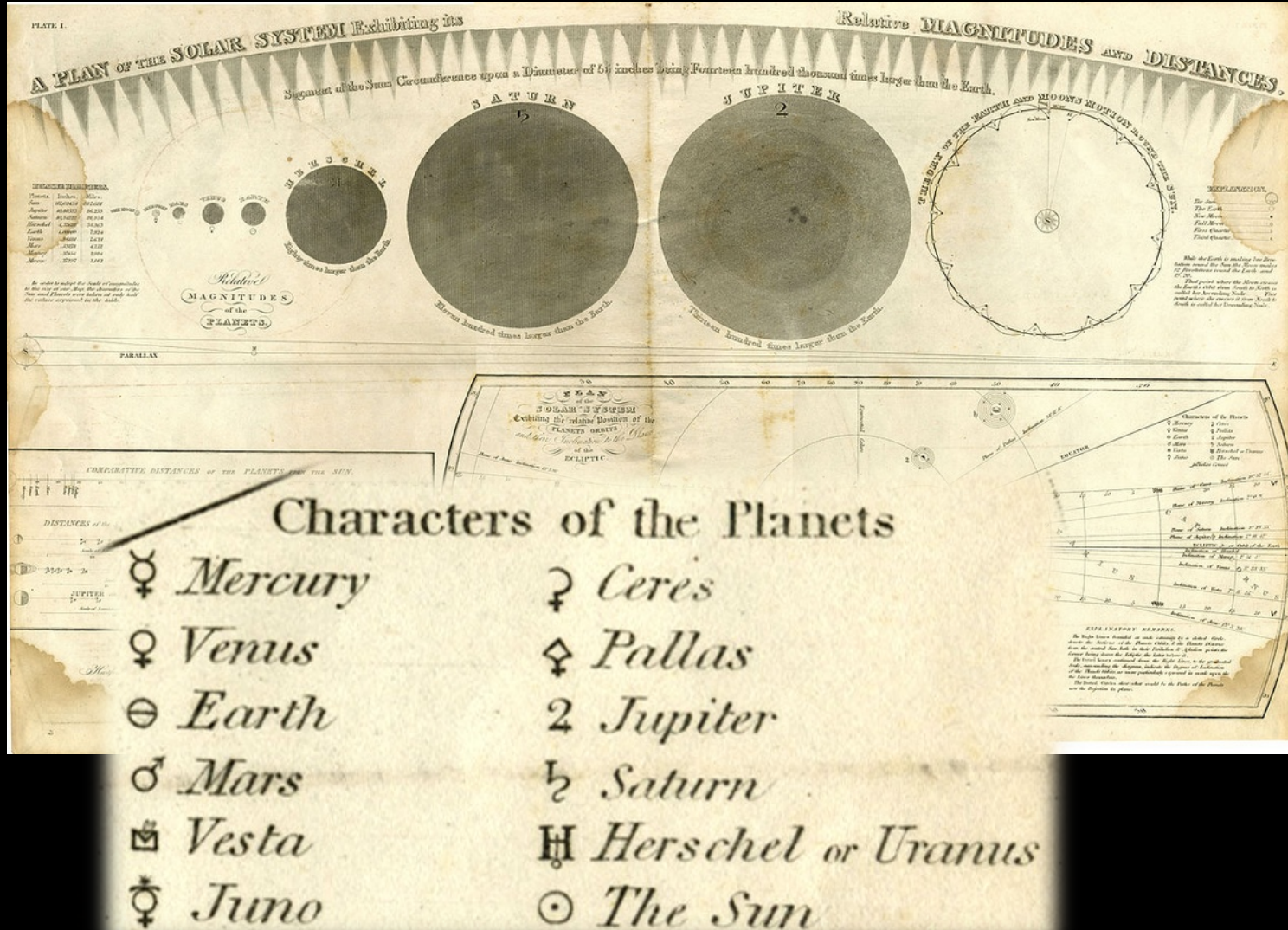
 Saturn

 Uranus

11


1807 – 1845

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 Mercury

 Venus

 Earth

 Mars

 Ceres

 Pallas

 Juno

 Vesta

 Jupiter

 Saturn

 Uranus

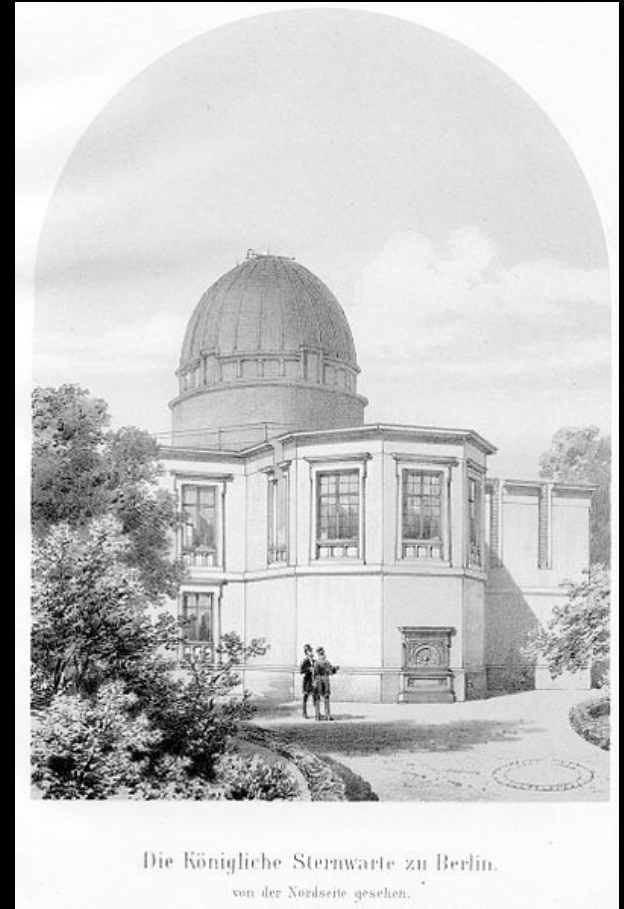
 Neptune

12

1846



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Johann-Gottfried-Galle.jpg;
NHP_1879_Berlin_Sternwarte_Nordseite_Tafel_VI.jpg



 Mercury

 Venus

 Earth

 Mars

 Ceres

 Pallas

 Juno

 Vesta

 Jupiter

 Saturn

 Uranus

 Neptune

12

1846



$$\frac{a}{1 \text{ AU}} = \frac{4}{10} + \frac{3}{10} \cdot 2^n$$

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BlankMap-World-1840.png;
BenjaminPeirce2.jpg

Smith's Illustrated Astronomy

(Asa Smith, 1848)

 Mercury

 Venus

 Earth

 Mars

60+



10s of asteroids

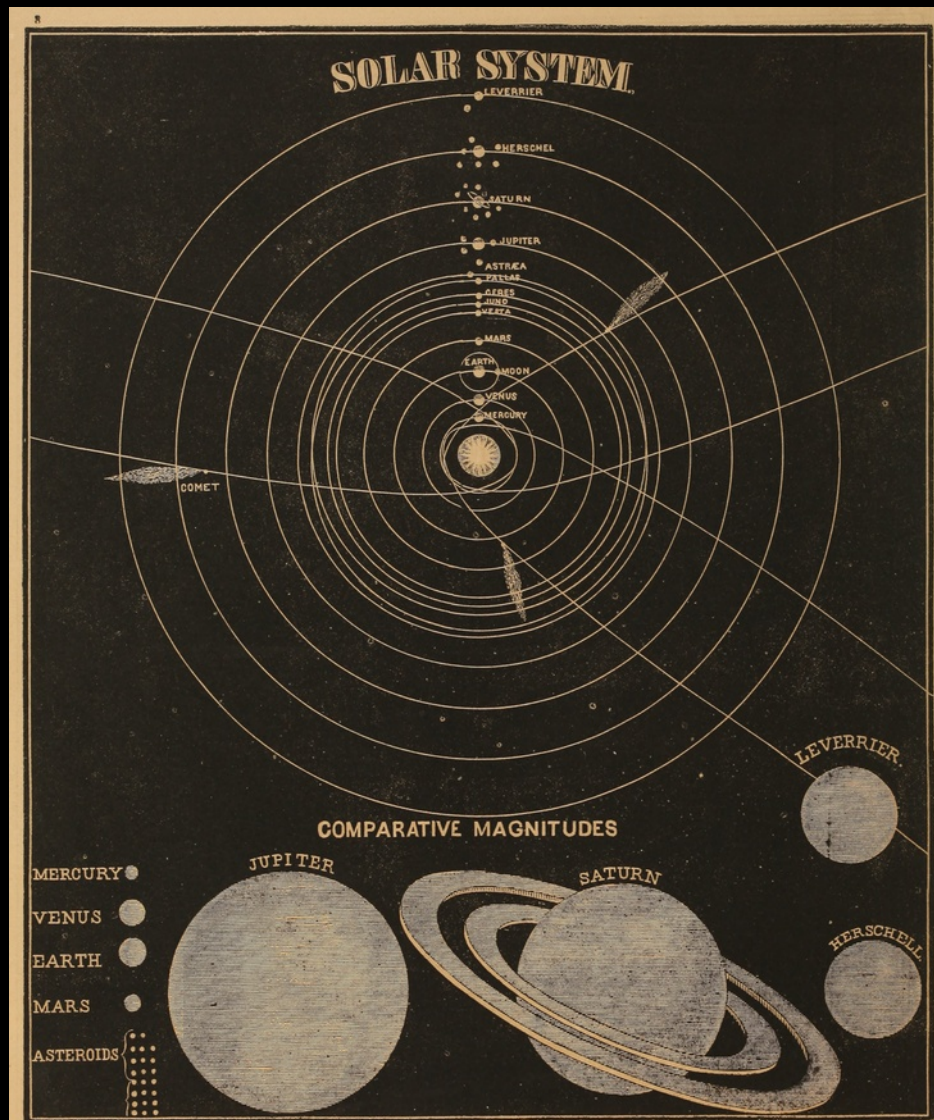
 Jupiter

 Saturn

 Uranus

 Neptune

ca. 1850 – 1860



Smith's Illustrated Astronomy

(Asa Smith, 1848)

 Mercury

 Venus

 Earth

 Mars

60+



10s of asteroids

 Jupiter

 Saturn

 Uranus

 Neptune

ca. 1850 – 1860

Q. How many primary planets are there ?

A. 8 large planets and 23 asteroids or small planets.

15th edition (1855)

[https://www.loc.gov/
item/43041124/](https://www.loc.gov/item/43041124/)

ASTERIODS



Q. How many primary planets are there ?

A. Sixteen ; eight being asteroids or small planets.

A. Sixteen ; eight being asteroids or small planets.

5th edition (1849)

[https://archive.org/details/
Smithquotstillus00Smit](https://archive.org/details/Smithquotstillus00Smit)

ASTERIODS



Mercury



Venus



Earth



Mars

60+



10s of asteroids



Jupiter



Saturn



Uranus



Neptune

ca. 1850 – 1860

Bezeichnung der Himmelskörper.

☉ Sonne.	♃ Jupiter.
☾ Mond.	♄ Saturn.
♿ Merkur.	♅ Uranus.
♀ Venus.	♆ Neptun.
♁ Erde.	♁ Asträa.
♂ Mars.	♃ Hebe.
♁ Vesta.	♁ Iris.
♁ Juno.	♁ Flora.
♁ Pallas.	♁ Metis.
♁ Ceres.	

Planet.	New Symbol.	Date of Discovery.	Old Symbol.
<i>Ceres</i> ,	①	1801, January 1,	♁
<i>Pallas</i> ,	②	1802, March 28,	♀
<i>Juno</i> ,	③	1804, September 1,	♁
<i>Vesta</i> ,	④	1807, March 29,	♁
<i>Asträa</i> ,	⑤	1845, December 8,	♁
<i>Hebe</i> ,	⑥	1847, July 1,	♁
<i>Iris</i> ,	⑦	" August 13,	♁
<i>Flora</i> ,	⑧	" October 18,	♁
<i>Metis</i> ,	⑨	1848, April 25,	♁
<i>Hygea</i> ,	⑩	1849, April 12,	♁
<i>Parthenope</i> ,	⑪	1850, May 13,	♁
<i>Clio</i> ,	⑫	" September 13,	♁
<i>Egeria</i> ,	⑬	" November 2,	♁
<i>Irene</i> ,	⑭	1851, May 20,	
<i>Eunomia</i> ,	⑮	" July 29,	♁

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Gould-1852-asteroid-symbols.jpg

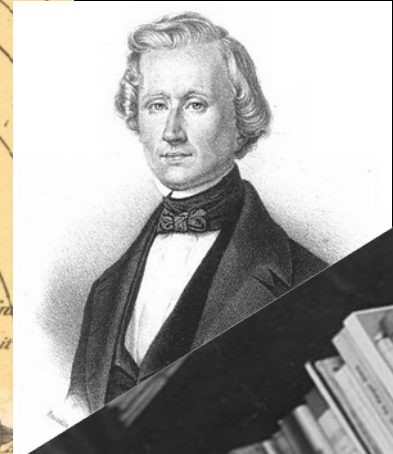
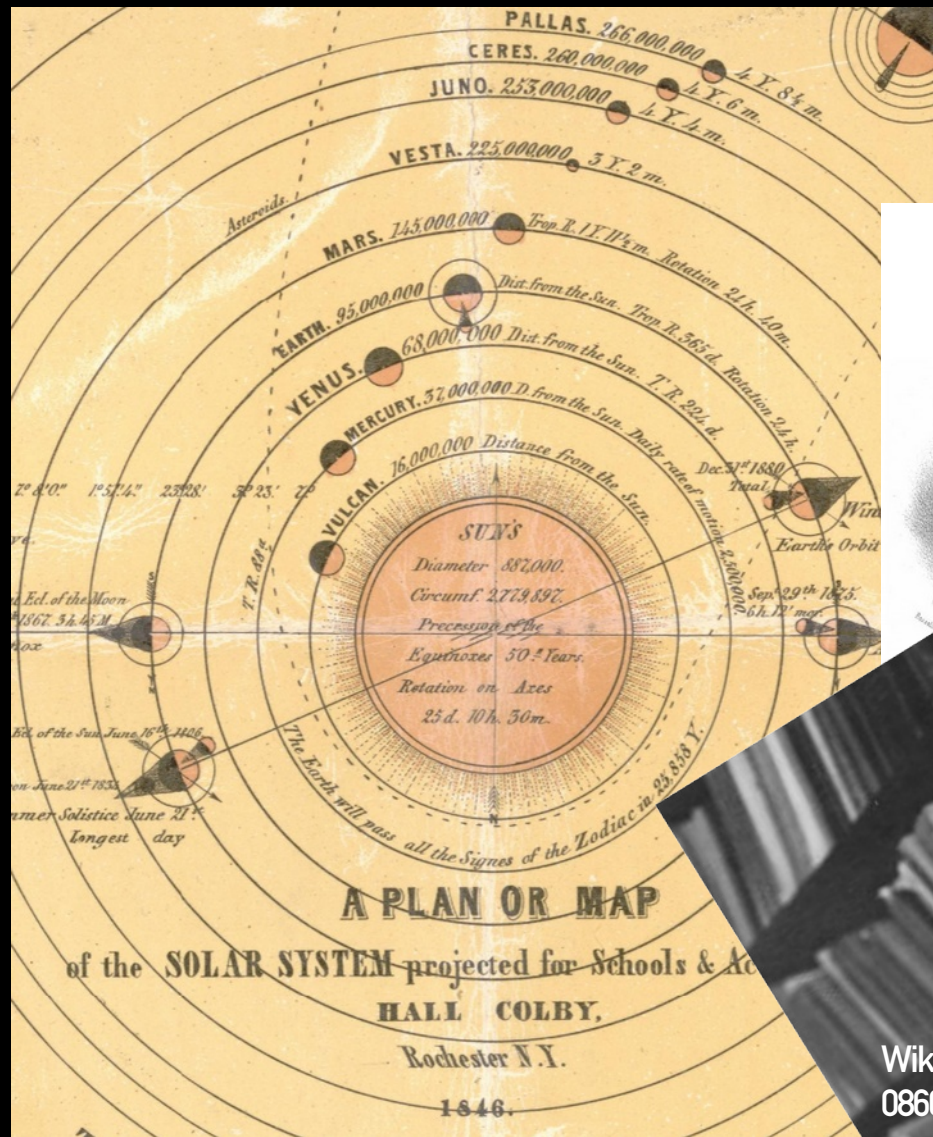
<https://www.loc.gov/resource/g3180.cf003790?r=0.072,0.276,0.844,0.462,0>

planet Vulcan? ca. 1846 – 1877



Maria Mitchell 1878

<https://time.com/4880606/total-solar-eclipse-history-1878/>



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 Mercury

 Venus

 Earth

 Mars

1200+


1000s of asteroids

 Jupiter

 Saturn

 Uranus

 Neptune

 Pluto

1930 – ca. 1960



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<https://www.planetary.org/space-images/the-pluto-discovery-plates>

Mercury

Venus

Earth

Mars

Jupiter

Saturn

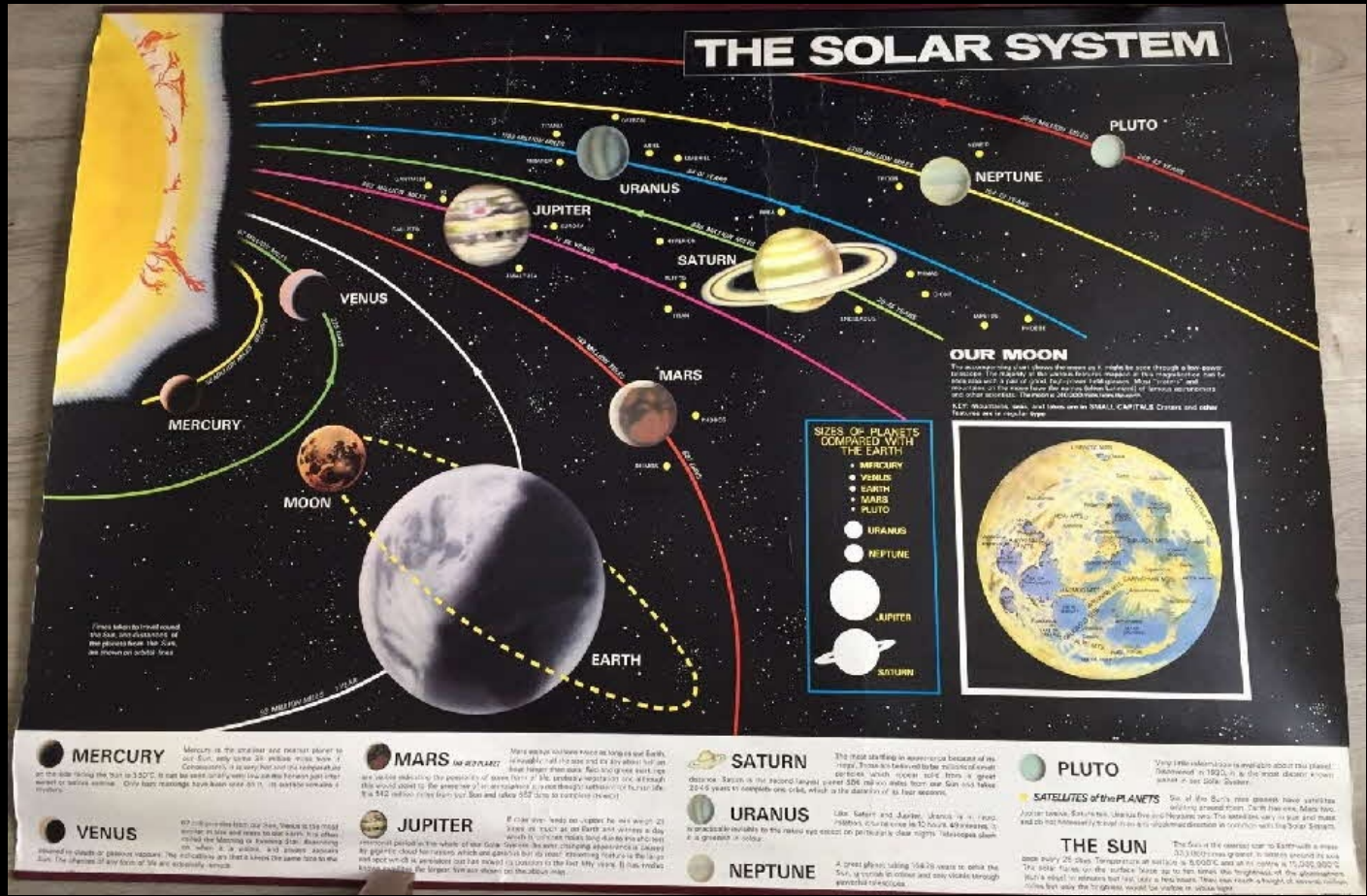
Uranus

Neptune

Pluto

9

ca. 1960 - 2006



3rd Revolution: The Outer Solar System

TNO, KBO, ETNO,
whaddayaknow?

 Mercury

 Venus

 Earth

 Mars

 Jupiter

 Saturn

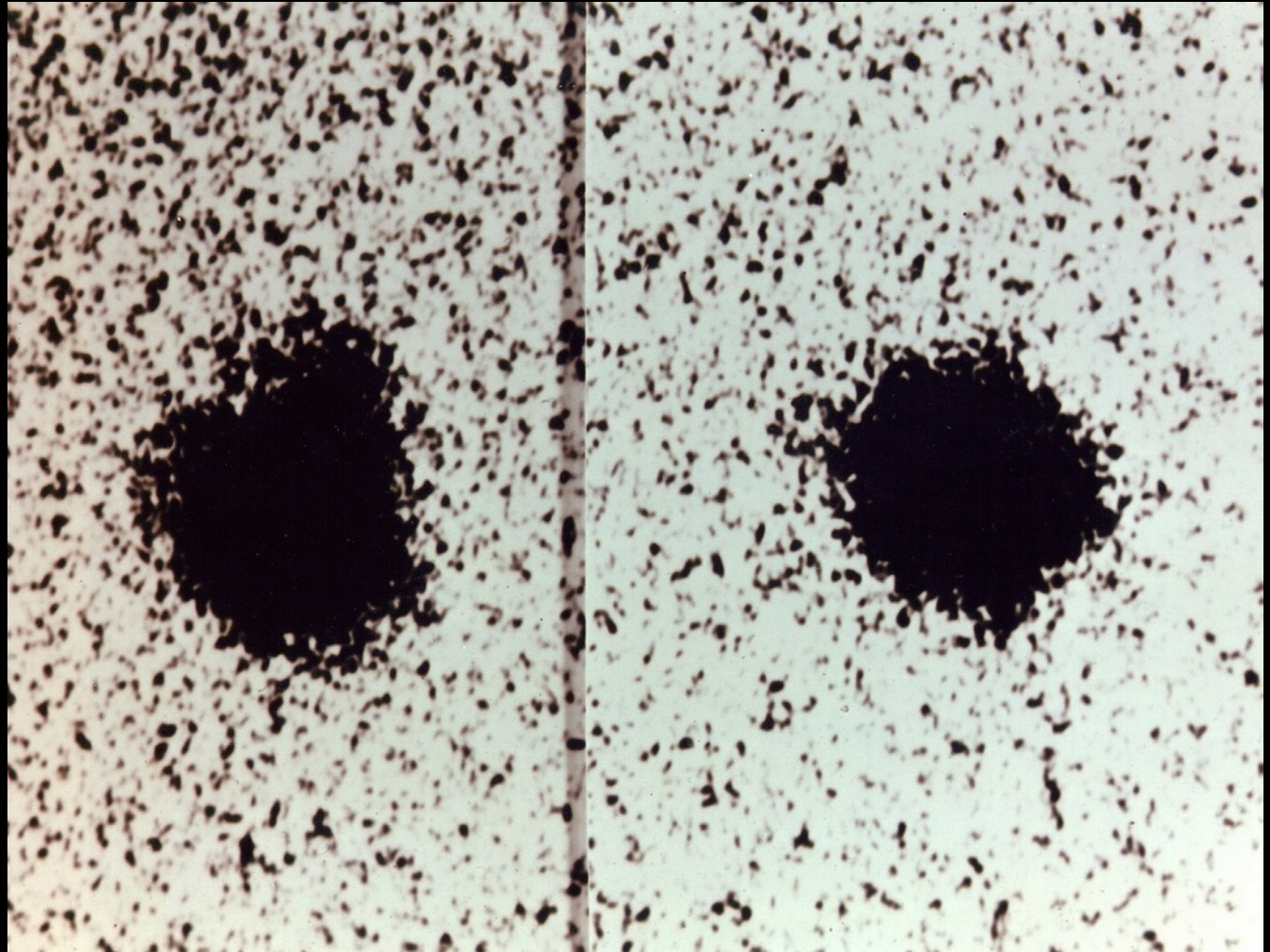
 Uranus

 Neptune

 Pluto

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ca. 1960 – 2006



 Mercury

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 Mars

 Jupiter

 Saturn

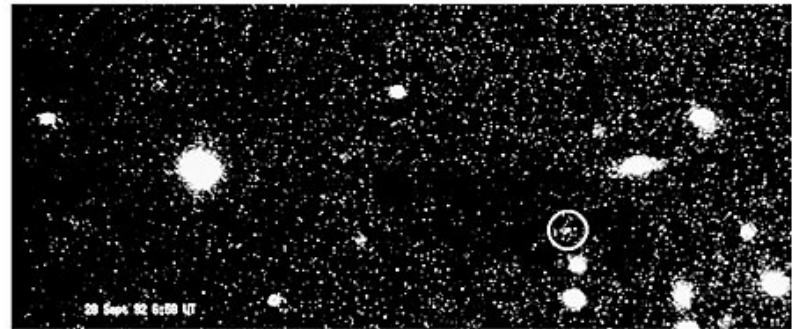
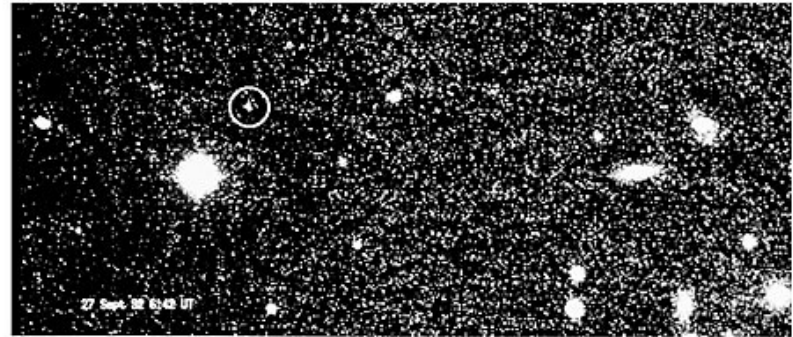
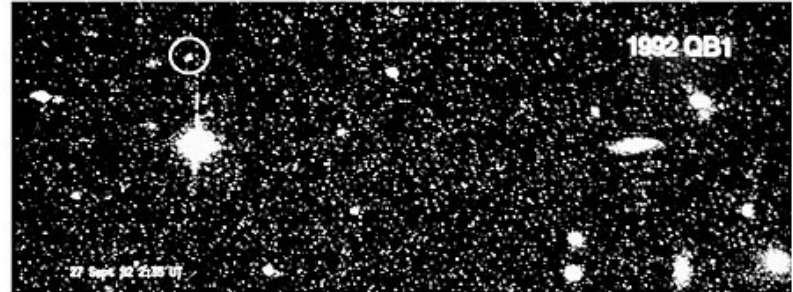
 Uranus

 Neptune

 Pluto

9

ca. 1960 – 2006



 Mercury

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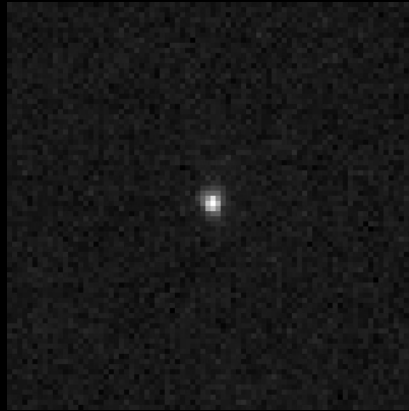
 Uranus

 Neptune

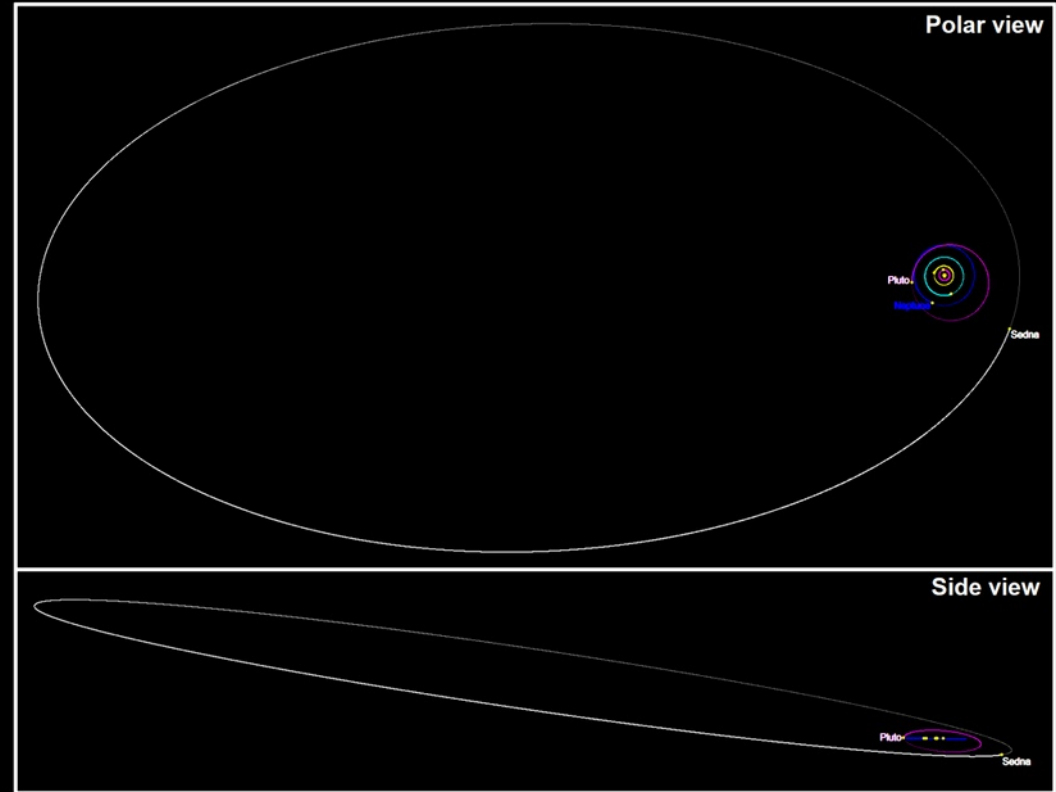
 Pluto

9

ca. 1960 – 2006



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 Mercury

 Venus

 Earth

 Mars

 Jupiter

 Saturn

 Uranus

 Neptune

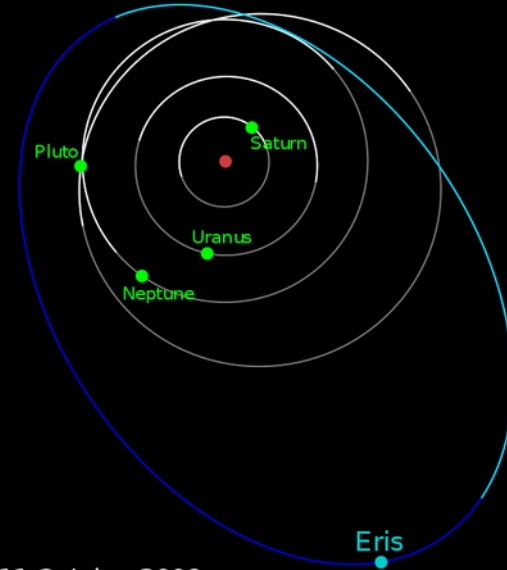
 Pluto

9

ca. 1960 – 2006



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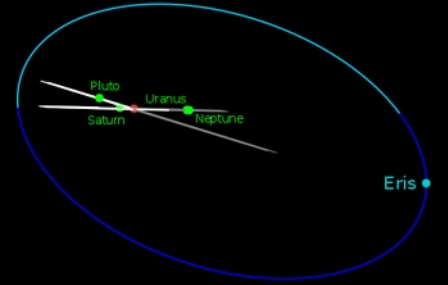
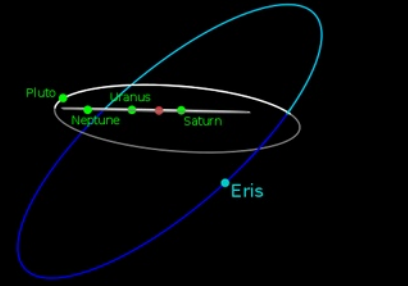


11 October 2006

Orbit of Eris
(136199 Eris)

Perihelion: 37.77 AU
Aphelion: 97.56 AU
Orbital period: 557 years

Eccentricity: 0.44
Inclination: 44°



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 Mercury

 Venus

 Earth

 Mars

 Jupiter

 Saturn

 Uranus

 Neptune

8

since 2006

Largest known trans-Neptunian objects (TNOs)



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EightTNOs.png
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 Mercury

 Venus

 Earth

 Mars

 Jupiter

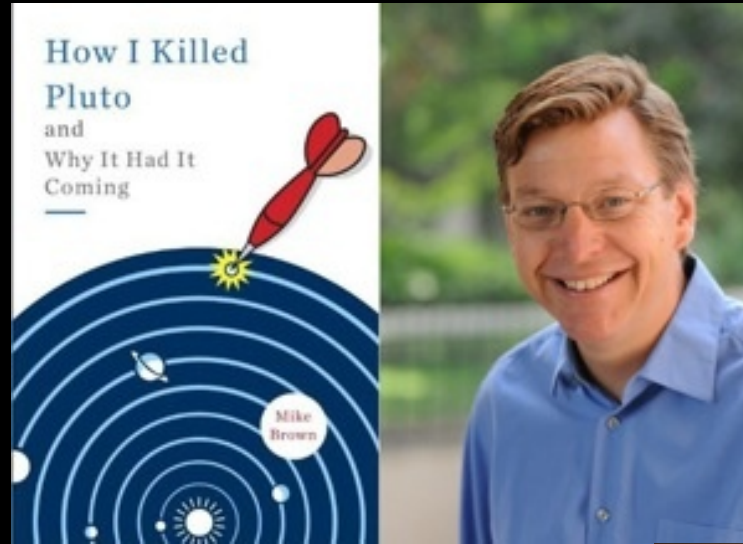
 Saturn

 Uranus

 Neptune

8

since 2006



 Mercury

 Venus

 Earth

 Mars

 Jupiter

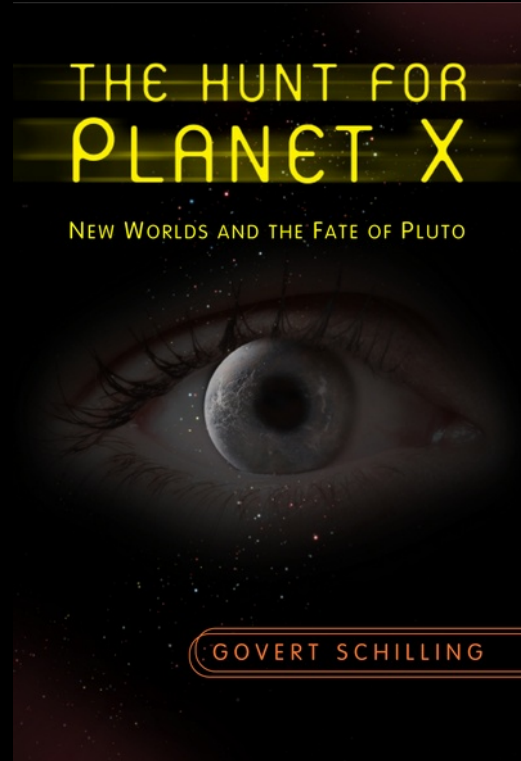
 Saturn

 Uranus

 Neptune

8

since 2006



space.com

Nibiru: The Nonexistent Planet

Nola Taylor Tillman








8–10 minutes



Artist's conception of the fictional rogue planet Nibiru, or Planet X. Nibiru does not exist, so don't be fooled. (Image credit: gilderm | sxc.hu)

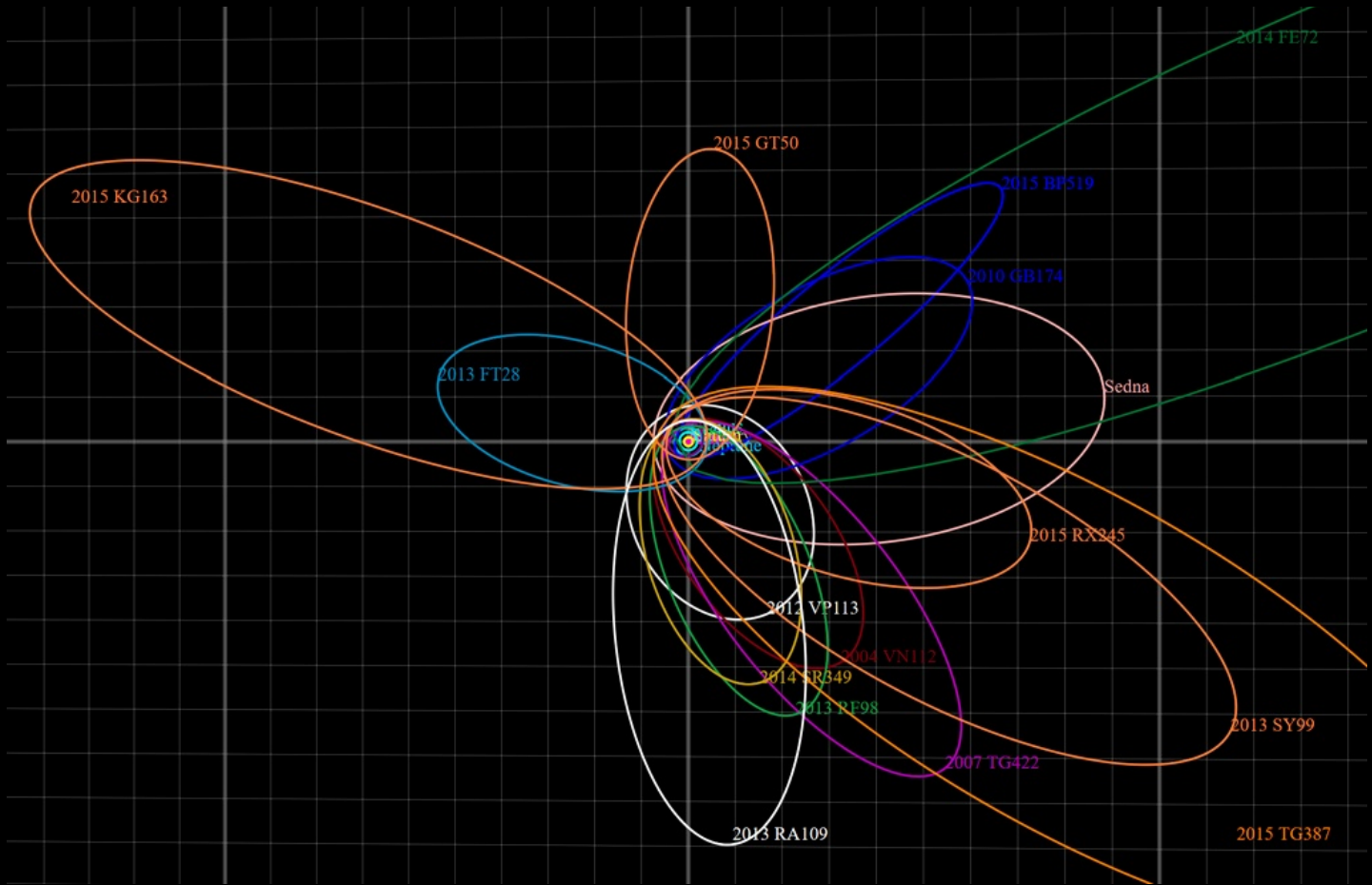
Linked to the close of the Mayan calendar, a [variety of rumors](#) spread regarding ways the world could [end back in 2012](#). One popular contender was Nibiru, a supposed planet that some claimed would collide with [Earth](#) at the end of that year. But despite the buzz, there's no scientific evidence supporting the alleged planet's existence — and, of course, our planet survived 2012 without absorbing a massive impact.

Nibiru has been linked to NASA by various bloggers. Because of this claimed connection,

-  Mercury
-  Venus
-  Earth
-  Mars
-  Jupiter
-  Saturn
-  Uranus
-  Neptune

8

since 2006

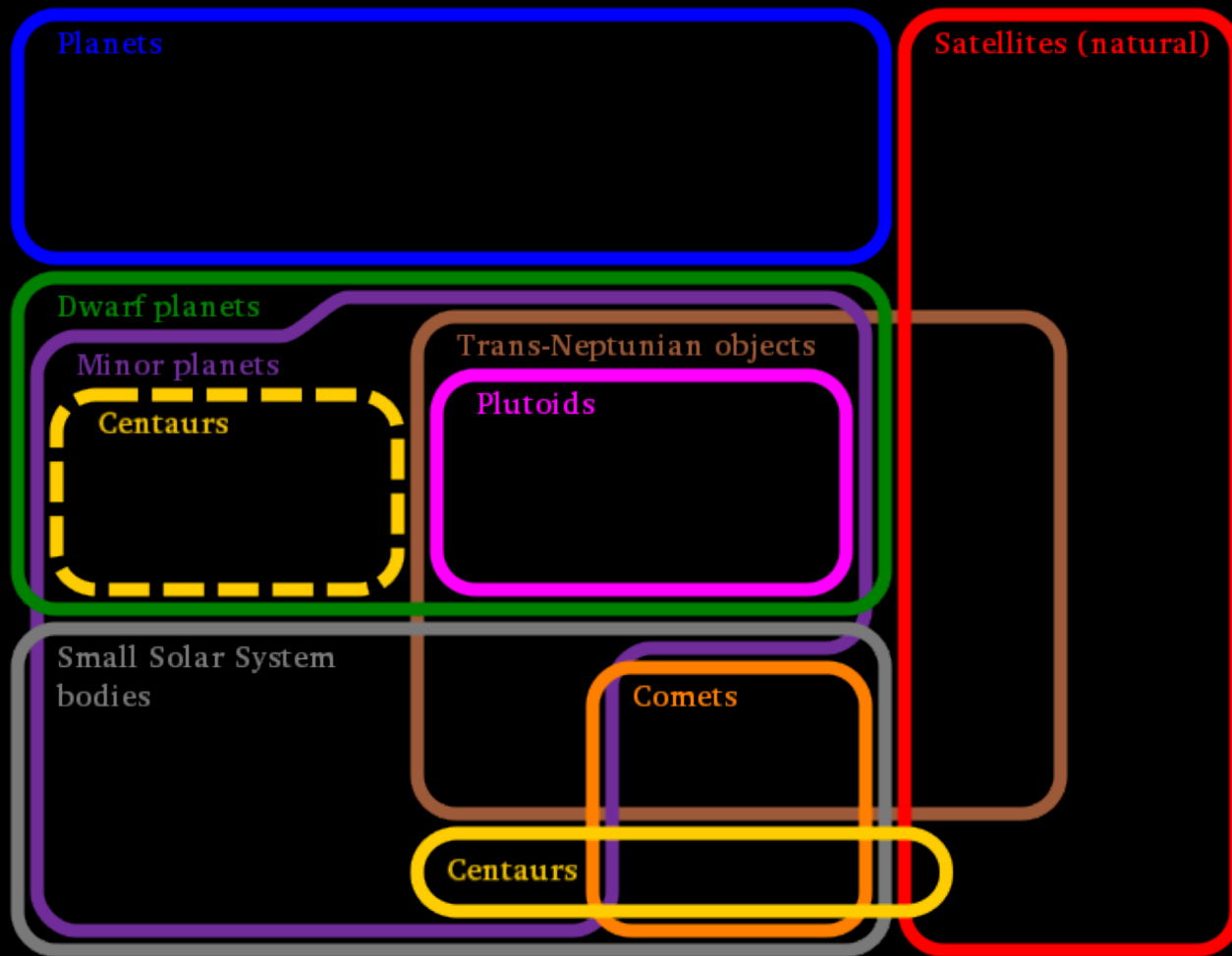


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Mercury
Venus
Earth
Mars
Jupiter
Saturn
Uranus
Neptune

8

since 2006



since 2006

∞



3rd Revolution: The Outer Solar System

To Be Continued ...

ca. 1930-1960

1200+



1846

12



2nd Revolution: The Inner Solar System

1801

∞



ca. 1781-1801

7



ca. 1550/1650

10



1st Revolution: The Center

Antiquity & Middle Ages

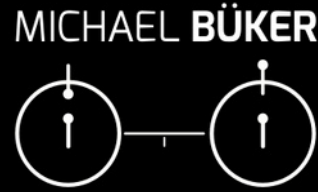
7



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Deutschlandfunk Nova