

(Excerpt – *The Story of Our Solar System*)

Chapter 11

The (*latest*) Ninth Planet

The Kuiper Belt – that dark, distant debris ring circling our Sun at a distance of between four and seven light hours – is home to a mysterious mix of Solar System family members.

Of course, we know of *Pluto* – the belt’s most famous inhabitant. Poor Pluto, whose status as the (*original*) ninth planet was downgradedⁱ in 2006 by a group of astronomical thugs known as the IAU, or International Astronomical Union.

Their reasoning for demoting the most distant and coldest of the ennead of local planets? Pluto had not cleaned up its room properly. No, seriously: Pluto’s ‘room’, or the path its orbit transcribed, still contains to this day a certain quantity of debris that any ‘real’ planet would have swept up by now (owing largely to a minimum mass that all ‘real’ planets possess, which in turn would generate a gravitational field sufficiently powerful to suck any smaller orbiting *stuff* down onto itself).

There’s another reason too, for Pluto having been thrown out of the League of Planets. Pluto, as it happens, is not alone out there in the Kuiper Belt. Far, far, *far* from it, in fact.

Beginning in 1992, Pluto gradually lost its place as the furthest, loneliest object known to humankind, when it was announcedⁱⁱ that another object, *1992 QB₁*, had been found. Since then, over 1000 additional objects have been discovered in orbit beyond Neptune – many of them with catchier names than... *1992 QB₁*.

More about: Pluto

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Pluto was discovered in 1930 by Clyde Tombaugh, an American astronomer who also discovered a plethora of asteroids, comets, variable stars, star clusters and galaxy clusters (oh, and he is also credited as being the most eminent astronomer to have [allegedly] seen unidentified flying objects, or *UFO*'s).

Pluto is officially classified as a ‘dwarf planet’, a ‘trans-Uranian’ object, and as a ‘KBO’ (Kuiper Belt object). Its mass is less than one-fifth of our Moon’s mass; its radius, less than one-fifth of Earth’s. If you stood on Pluto, you would weigh only 6% of what you weigh on Earth (not including your parka, toque and mitts).

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Temperatures on Pluto range from minus 225 to minus 235 degrees Celcius (which is only 40 to 50 degrees higher than absolute zero – the lowest temperature possible in the universe).

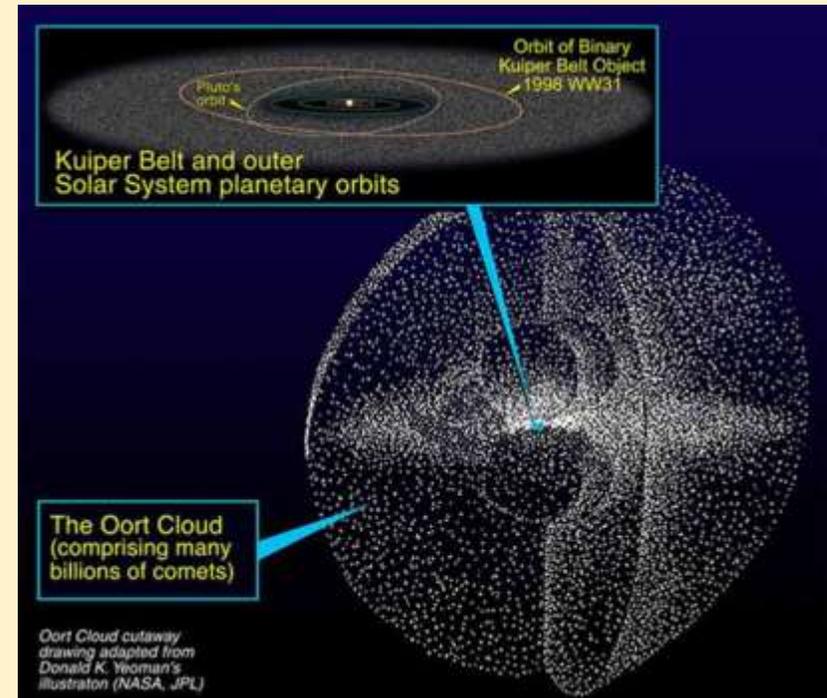
Despite being so small, so cold, and so far away, Pluto still manages to pull its own weight – out there in the Kuiper Belt – by shepherding an impressive little set of moons.

The first of Pluto's moons is Charon - measuring in at about half the radius of Pluto. Discovered in 1978 by American Astronomer James Christy, it is by far Pluto's largest companion.

Charon and Pluto are tidally locked: both present the same face to one another as they revolve around their barycenter (see **Ch 1: To Begin**), situated almost 1000 km out from Pluto's surface.

Between 2005 and 2012, four additional Plutonian moons were discovered. In order of size, they are: Hydra, Nix, Kerberos, and Styx. All are irregularly shaped (ie: not spherical), and considerably smaller than Charon.

Specifically, a number of newly-discovered KBO's have been found to have radii very close to Pluto's. *Eris* – discovered in 2005 by American Astronomer Mike Brown – was long thought to be slightly larger than Pluto, until a measurement by occultationⁱⁱⁱ in 2010 put it firmly in its place.



The Kuiper Belt and The Oort Cloud (image credit: NASA)

Nevertheless, with the discoveries of small planets in the Kuiper Belt such as Haumea, Makemake, Sedna, Quaoar, Orcus, Salacia, Varuna, Varda, and a growing number of others, it became increasingly clear that we had a problem.

The problem was this: if Pluto remained the ninth planet, then Haumea had to be the tenth, Makemake the eleventh, Eris the twelfth, and Sedna landing in at lucky thirteenth.

And it wouldn't stop there.

There are anywhere from ten to 750 possible *extra* planets out there, of gradually decreasing size.

And so, where was the line? Were they *all* planets? And if so, did we need to start re-issuing updated school textbooks, teaching our children about all 758 planets in our solar system, along with each planet's compliment of moons?

So, in come the thugs from the IAU, disqualifying *everything* from Pluto onwards (not to mention all the planetoids in our Solar Systems *inner* asteroid belt!) from claiming planetary status.

It was probably for the best...

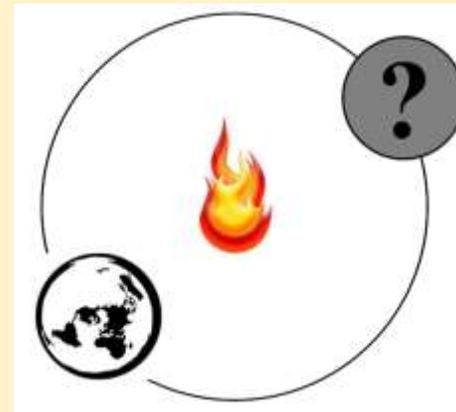
... *plus* there was a consolation prize. A new status was formed: that of *Dwarf Planet*. Sure, it's not up there with the exclusive Solar-System membership title of PLANET, but it was something, at least.

So, there we were in 2006, down one planet, but richer by a healthy host of new dwarf planets. Did that mean the dream of a ninth planet was over? Not by a long shot.

Consider the following three propositions.

I. Counter-Earth

As far back as the time of Greek philosopher Pythagoras, there were theories of a mysterious, invisible planet, that was essentially Earth's doppelganger-like opposite. The Greeks called it *Anticthon*. It, along with the Earth, the Moon, the Sun, and a few other planets, all revolved around something called a 'Central Fire'.



Anticthon & Earth, circling the Central Fire.

Anticthon was never visible from Earth, because it was always on the opposite side of this 'Central Fire' from us. Oh, and the Central Fire was never visible from Earth either, because it was always Earth's bottom side that faced it...

...Earth's *bottom* side, which humans did not inhabit, because the Earth was flat.

Ok. There were some problems with the Greek's theory; but you can only get so far with an idea without testing it (and the ability to test some of these theories would have to wait for 2500 years).

Postulates of an anti-Earth planet on the opposite side of the *Sun* persisted, though; and until we were able to plumb the area of space that was perpetually blocked by our local star,

those ideas persisted. An un-seeable ninth planet behind the Sun remained a possibility, until such time that it did not.

That time finally came in 2006, when NASA deployed a pair of space probes as part of their STEREO coronagraph project^{iv}. One probe leaped ahead of Earth's orbit; the other trailed behind. Together, they were the first objects that had a clear view of what was directly behind our Sun, and relay that information back to us.

The result: no Antichthon.

II. *Nibiru*

As we now know, our Solar System family is not – despite our most fervent wishes – unique in the galaxy, much less the universe. Families of planets in orbit about other stars now seem to be the norm, as we discover new planetary systems on seemingly a continual basis (a process which began in 1995 with the discovery of *51 Pegasi b*, a ‘hot-Jupiter’ planet in orbit about a star approximately 50 light years from Earth).

(We'll talk more about these planets of extra-solar origin, or *exoplanets*, in **Chapter 13: Wanderers from Afar.**)

But concepts of a ‘rogue’ planet (of extra-solar origin) coming into our Solar System and wreaking havoc have long been on the minds of some of history's more imaginative doomsday proclaimers.

The planet Nibiru embodies all of these theories: a rogue planet not-of-this Solar System, inexorably closing-in on Earth.

Some ‘models’ (well, more like predictions, or prophetic warnings, in some cases) call for a collision between Nibiru and Earth, destroying both planets, and effectively ending life* for good.



Collision of 2 rocky planets - Earth and Nibiru's fate? (image credit: Lynette Cook)

(*except, perhaps, for the intrepid tardigrade [*Milnesium tardigradum*], who – after the elimination of every other form of life on Earth and Nibiru – may rise to become the dominant life form in our Solar System, perhaps even evolving into an advanced civilization several tens of millions of years hence!)

Other predictions have Nibiru coming close, but not quite hitting Earth.

“Oh, that doesn’t sound so bad,” you might be telling yourself.

Well, in the former scenario, with the utter destruction of Earth, our end would likely come *relatively quickly* (as in, on the scale of 2-10 minutes)! Our last fateful moments would be filled with sheer panic, extreme fear, and a final, horrifyingly gruesome death: as our planet collapses beneath our feet, and we find ourselves exposed to the vacuum of space, while simultaneously being blasted by fatal doses of radiation from above, and a blisteringly hot shower of rapidly expanding magma from beneath.

The scenario whereby Nibiru *doesn’t* hit us could actually be worse. *Much* worse.

The gravitational disruption of a close-encounter of the planetary kind could have all sorts of cataclysmic fall-outs for planet Earth. If Nibiru’s closest-point-of-approach was within Earth’s *Roche radius* (see **Chapter 2: How it All Works**), the resulting tidal forces would not only suck away most of our atmosphere, oceans, lakes and rivers, but would tear up much of the soil, plant-life and – *yes, you guessed it* – animal life that was *fortunate* enough to be caught between the two planets.

Yes, fortunate enough. For those animals (we humans, included), death would come quickly – either from suffocation, or from the resulting fall either back to Earth, or ‘up’ onto the

surface of Nibiru (though, as we all know – there is no ‘up’ in space!).

For those hapless souls trapped on the far-side of Earth during our (hypothetical) near-miss with Nibiru, they would spend days or weeks, suffering from the bends (as a result of the decreased atmospheric pressure), being constantly out of breath (from the critical loss of oxygen), and likely freezing to death, as whatever water, soil and air that remains about Earth form an impenetrable layer in the skies above us, blocking out our source of heat – the Sun.

We will all die (many of us slowly – with *plenty* of time to contemplate our inevitable, ignoble fate), and the Earth will be left in a state of ‘nuclear winter’ for generations, or eons – depending on just how closely Nibiru, the killer planet, approached us.

As it so happens, the existence of Nibiru has been **very firmly debunked and rejected** by every reputable scientist who has chosen to speak on the matter. So you may sleep soundly, tonight.

III. Planet IX

Finally, we get to the point in the chapter where we can speak with some degree of certainty on the existence of an as-of-yet undiscovered planet.

As more and more dwarf planets were being discovered, irregularities in their orbits began cropping up. These irregularities were best explained by the hypothetical

presence of a massive, yet-to-be-discovered body, somewhere deep in the Kuiper Belt.

In early 2016^{vi}, astronomers from Caltech established some parameters for such an object. They declared that this planet was likely four times the radius of Earth, ten times Earth's mass, and circled the Sun in a vast, and highly stretched out orbit.



Planet IX – note the Sun, and Neptune's orbit, at far right (image credit: Tom Ruen)

A year on Planet IX would last somewhere between ten and twenty thousand *Earth* years, and during this time, the new

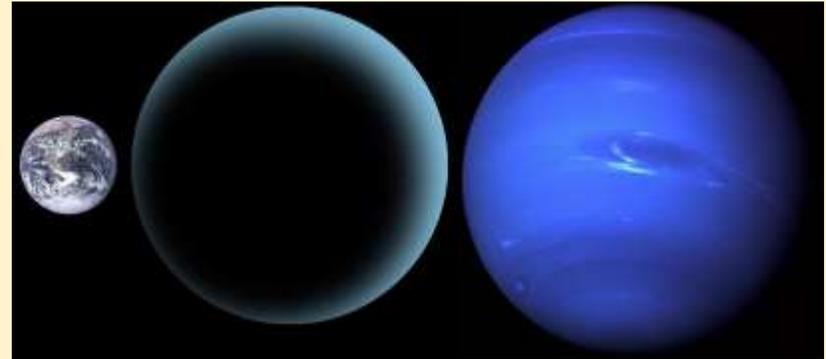
ⁱ www.iau.org/public/themes/pluto/

ⁱⁱ IAUC 5611: 1992 QB1

ⁱⁱⁱ Sicardy, B., Ortiz, J.L., Nature **478**, 493-496 (2011)

ninth planet would find itself anywhere from 25 – 95 light hours from the Sun (ie: text conversations between you and your sweetheart stationed on Planet Nine would be *painfully* slow).

It's too early to say for certain that Planet IX is out there, however. As of autumn of 2017, no definitive proof for the (*new*) ninth planet of our solar system exists.



Planet IX - size comparison to Earth, Neptune (image credit: Wikimedia commons)

We have nothing but conjecture and extrapolation to suggest that there is a giant, dark planet out there.

Nevertheless, this extrapolation makes the existence of Planet Nine far more likely than its prophetically portended predecessors, Anticthon and Nibiru!

^{iv} STEREO-ssc.nascom.nasa.gov/where.shtml

^v Mayer, M., Queloz, D., Nature **378**, 355-359 (1995)

^{vi} Konstantin, B., Brown, M., The Astronomical Journal **151** 22 (2016)