

The case for the moon as a planet

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While marveling at our natural satellite one evening, I started to wonder why our moon isn't classified as a planet. Optically it appears as big as the Sun, though it is not.

The International Astronomical Union came out with an official definition of a planet in 2006, but that definition has remained controversial. It resulted in the demotion of the only American-discovered planet to a dwarf. (Boo!) I will not deny the moon its satelliteness, but I believe it has a great ability to multitask. So let's take each of the IAU's definitions of a planet and see how it fits the moon. The moon:

Is in orbit around the sun: There is no denying that the moon goes around the sun. It does it in 12 months in fact! Sure, it is a wobbly orbit because it is also pulled back and forth by the Earth getting in its way but, hey, that is why it is called multitasking.

Has enough mass to have a nearly round shape: This one is true. It is a definite fact. NASA has gone around it so many times. So, unless you are a flat-mooner (please give us a break if you are!), this is a given. The moon is one-fourth the size of Earth. Except for Pluto and its moon, Charon, the moon is larger in comparison with the planet it orbits than any other satellite in the solar system. Notice: still plugging Pluto as a planet.

Has "cleared the neighborhood" around its orbit: This one is kind of iffy as we, from time to time, keep getting announcements of near-miss or may-hit-us-sooner-or-later asteroids. Over 10,000 near-Earth asteroids have been discovered in the past dozen years alone. So technically the moon has NOT done its job clearing debris out of the neighborhood. But then neither has the Earth or Mars. Mars even has two pesky asteroids in orbit to remind it of its failures. So, unless we want to demote Earth and Mars, let's give the moon a pass on this one.

So, this must mean the moon is and can take its place as the ninth planet in the solar system, right? Well no, not really. There is one factor the moon has failed to account for: It is called a "barycenter."

As the moon goes around the Earth, they pull or tug on each other. It really is about a battle of gravity. There is a common point, almost a pivot point (a barycenter) the two spheres revolve around. Because of the Earth's much greater mass, the barycenter has always been deep inside the Earth. It is always moving because the moon is always moving, and the Earth keeps on spinning.

At present, the barycenter is located about a thousand miles below the surface of the Earth

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and always under the moon's direct overhead point over the Earth. All other moons in the solar system have this feature,

so I guess this makes the moon a satellite and I guess the IAU wins the battle and the moon is not a planet. But IAU may not win the war.

As everyone knows, the moon is moving away from the Earth, 1.6 inches

every year. As soon as the distance from the Earth to the moon is one-third greater than it is now, the reduced attraction to Earth will move the barycenter above the surface of the Earth. For the first time, the Earth-moon

system will become a true double planet system and the IAU will have to review what defines a planet or give the moon its due.

So, when you look up at our impressive and marvelous moon at night,

give our closest celestial neighbor its earned respect. It has quite a long history with the Earth and will be with us a long time into the future.

The Popular Astronomy Club invites you to join for free

observations of the night sky through our telescopes on the third Saturday night of the month (March–November) in the parking lot of Niabi Zoo. Also check out our website: (<http://www.popularastronomyclub.org/>) and see what we are about.