

Re: That planet definition

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In article <ec4hu9\$ef6\$1@xxxxxxxxxxxxxxxxxx>, arromdee@xxxxxxxxxxxxxxxxxx (Ken Arromdee) wrote:

This is absurd:

-- A serious attempt to divide planets into classes would also separate the gas giants out from the rest of the planets. Dividing the planets into 8 planets/plutons, but **not** dividing them into rocky planets/gas giants/plutons, smells like the proposal is more an attempt to keep Pluto away than to honestly classify planets.

No, I think it's an attempt to keep Pluto a planet (pluton is a subcategory of planet), while simultaneously recognizing that it's really just a KBO, and there are likely to be thousands of other KBOs by the time we're all done.

-- The discussion--at least the public discussion (I'm not privy to IAU meetings, of course) didn't address the barycenter issue at all. It seems to have been dropped in out of the blue, perhaps as another attempt to emphasize Pluto's difference from the big 8.

No, this was necessary to properly fill out the definition. If you're going to say that a planet can't be a satellite of another planet -- a very sensible thing to say, IMHO -- then you have to define how you tell when that is the case. Often it's obvious, but in the case of Pluto/Charon, it's not. This is not the IAU's fault, it's just a fact of nature. How do you define a satellite? By relative mass? Volume? Or by the COG they're orbiting? The latter seems as good a criterion as any.

Consider that if a moon kept its orbit, but the primary was made out of denser material, the moon might be a planet with no change to its mass or orbit.

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Yes, and conversely, if the primary kept its density, but the other body moved closer to the primary, it might become a moon. Or if it kept its density and distance, but the primary were more massive, the other would become a moon. So you can hypothetically change the parameters and make a non-moon into a moon or vice versa — so what?

And plenty of people have pointed out that in billions of years the Earth's moon will move far enough away to become a planet by this definition.

In billions of years both the Earth and its moon will be incinerated. Again, so what?

(And they could just as well use the "orbit around the sun is concave" definition instead of going by barycenter, which would classify our moon as a planet right now.)

Which demonstrates why that isn't a good definition. The goal is to have something which is precise, but also more or less matches the common meanings of the words as we've used them for centuries. The common meanings were not precise, so it's impossible to match them exactly, but I think they've done a great job of getting close.

— While roundness is superficially appealing as a way to classify planets, I don't recall any press releases about Kuiper Belt objects which state that scientists have discovered their shape.

You don't need to discover their shape; you only need to know the mass and some idea of the strength of material it's made of. Remember, a small object that happens to be round doesn't count; the definition says that it has to be big enough to be pulled into a spheroid by its own gravity.

Size is crudely estimated, but shape doesn't seem to be determined at all (except by saying "if it's that big, it must be round").

Exactly.

— This proposal fails the "what would you do if you found a Kuiper Belt object as big as the Earth?" test.

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Um, how does it fail that? What you'd do is give it a name and add it to the list of planets. Seems sensible to me.

Best,
– Joe

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