

New planet definition sparks furore

David Shiga, NewScientist.com, 25 August 2006

The new planet definition that relegates Pluto to "dwarf planet" status is drawing intense criticism from astronomers. It appears likely that the definition will not be widely adopted by astronomers for everyday use, even though it is the International Astronomical Union's (IAU) official position.

On Thursday, astronomers at the IAU meeting in Prague approved a resolution that says *the solar system has only eight planets, with Pluto excluded*. Pluto is considered a "dwarf planet" instead.

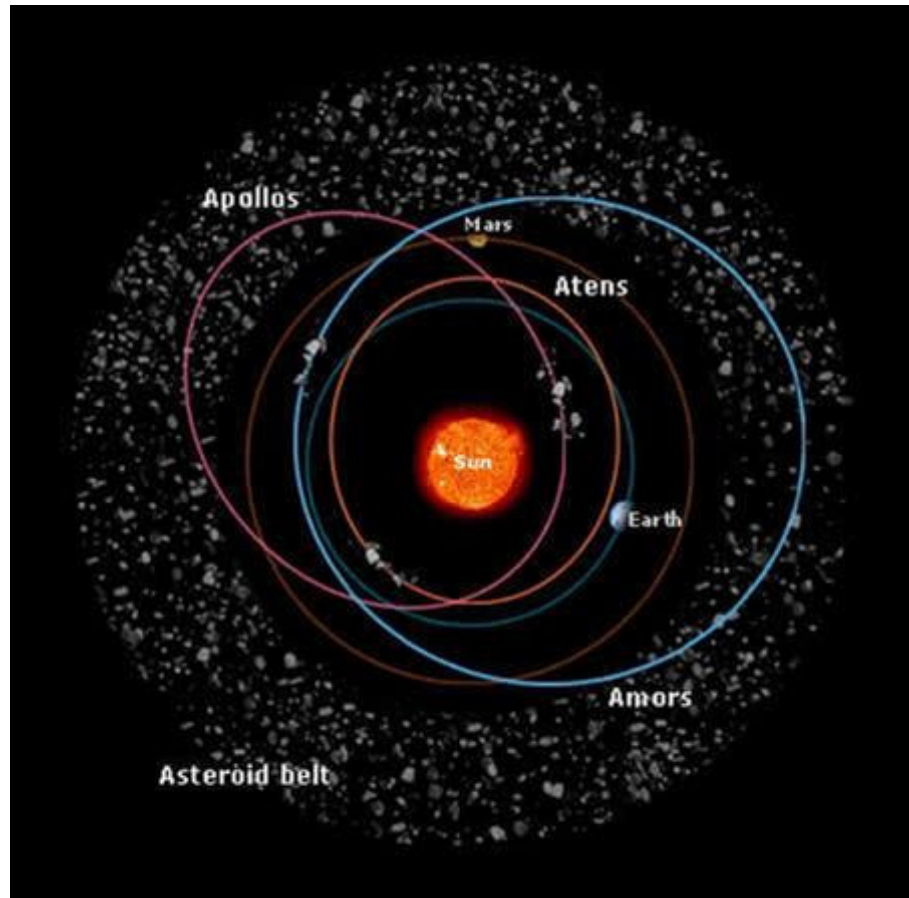
But the new definition has provoked a backlash. Alan Stern, who heads NASA's New Horizons mission to Pluto and works at the Southwest Research Institute in Boulder, Colorado, US, says the new definition is "awful". "The definition introduced is fundamentally flawed," he told **New Scientist**. "As a scientist, I'm embarrassed."

Four planets

He says only four of the eight objects mentioned in the IAU definition actually meet the definition's criteria – and Earth, Mars, Jupiter and Neptune do not. That is because the definition stipulates that to be a planet, an object must have cleared the neighbourhood around its orbit. But Earth's orbital neighbourhood is filled with thousands of near-Earth asteroids, Stern says.

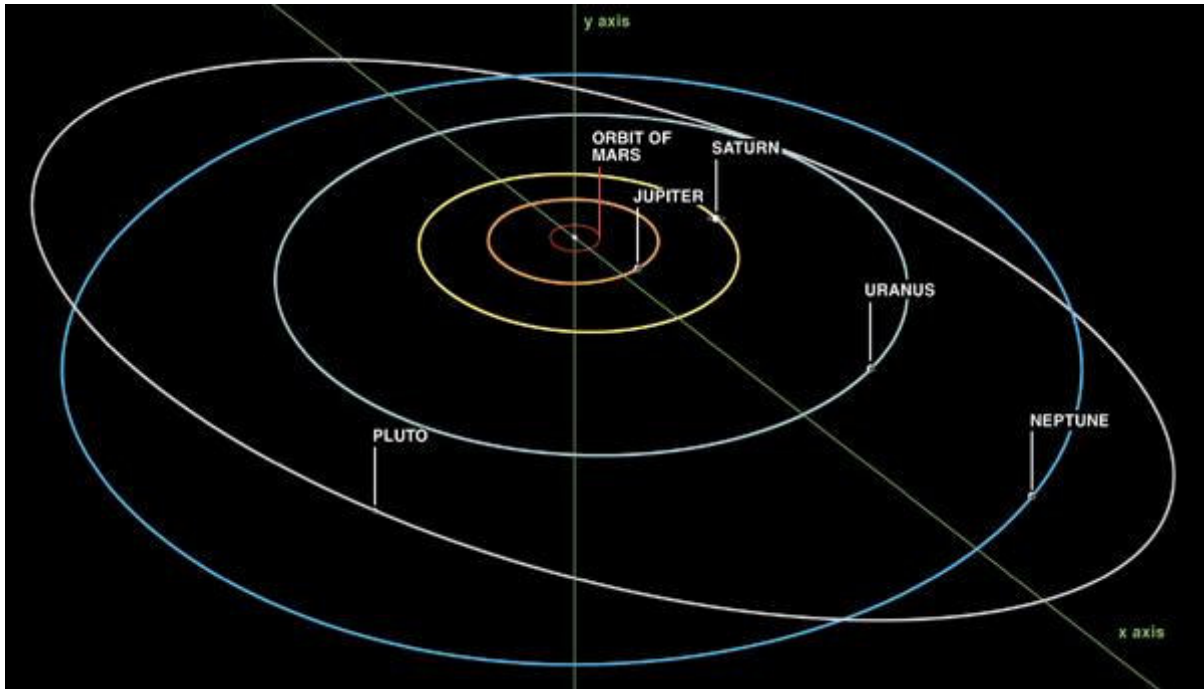
And Mars, Jupiter and Neptune have so-called "Trojan" asteroids sharing their orbits. "This is a half-baked criterion for planethood," he says.

He says the new definition was pushed by people who are unhappy with having large numbers of planets (an earlier proposal, which



Asteroids cross the orbits of Earth and Mars, leading some astronomers to argue that these two worlds have not cleared the neighbourhoods around their orbits, as the new planet definition stipulates (Illustration: ESA/Medialab)

was abandoned after heavy criticism at the meeting, would have potentially allowed *hundreds of new planets into the fold*). "It's just people that say things like, 'School kids will have to memorise too many names.' Do we limit the number of stars because children have to think of too many names? Or rivers on the Earth? It's just crazy," Stern told **New Scientist**.



Neptune has "Trojan" asteroids and its orbit is also crossed by Pluto, but it is still a planet under the new definition (Illustration: Lunar and Planetary Institute)

Minority report

Stern is also critical of the fact that only astronomers present for the vote, which occurred at the end of the two-week meeting, were allowed to have their say on the matter. No email voting was allowed for the decision – it was made by a show of hands – and that meant that less than 5% of the nearly 9000 IAU members actually voted. "You're going to see a real backlash in the coming weeks," he says. "I know there is a petition among planetary scientists that's getting a lot of support." In any case, he says, astronomers are not obligated to use the new definition, since the IAU does not have the power to enforce it. "I don't think it's going to be very widely followed," he says.

David Weintraub, author of the upcoming book *Is Pluto a Planet?* and a researcher at Vanderbilt University in Nashville, Tennessee, US, says he thinks Pluto is still a planet – even under the new definition.

Grammar issue

"As best I can tell, 'dwarf' is an adjective and 'planet' is a noun," he told **New Scientist**. "I think the IAU thinks they defined Pluto to not be a planet. But they in fact have defined Pluto to be a planet – a particular kind of planet."

Astronomers who proposed the new definition respond that the term "dwarf planet" is meant to be thought of as a single concept. And others point out that "minor planets" – asteroids and other small bodies – are not considered planets.

But he agrees with Stern that the stipulation that a planet clears out its neighbourhood is flawed. A better definition would say a planet is an object that orbits a star and is large enough to be spherical, but is not large enough to be a brown dwarf – a "failed" star with between about 13 and 75 times the mass of Jupiter – or a star, he says.

'This is crazy'

"Everyone agrees on those criteria," he says. "The question is, can we agree on additional criteria to refine the definition further? I think the answer is no." "Everybody who has communicated with me is saying, 'This is crazy and we don't agree with it,'" he adds. "I'm not convinced that the folks who were at the meeting represented well the larger community."

But not everyone is unhappy with the decision. Richard Conn Henry of Johns Hopkins University in Baltimore, Maryland, US, says he is pleased with the outcome. "As far as I'm concerned, the right decision was made," he told **New Scientist**. "I know a planet when I see it and there are eight of them." He says it makes no sense to call Pluto a planet because it is just one of huge numbers of objects in the Kuiper Belt beyond Neptune.