

NEWS

Astronomers reject the term 'planet'

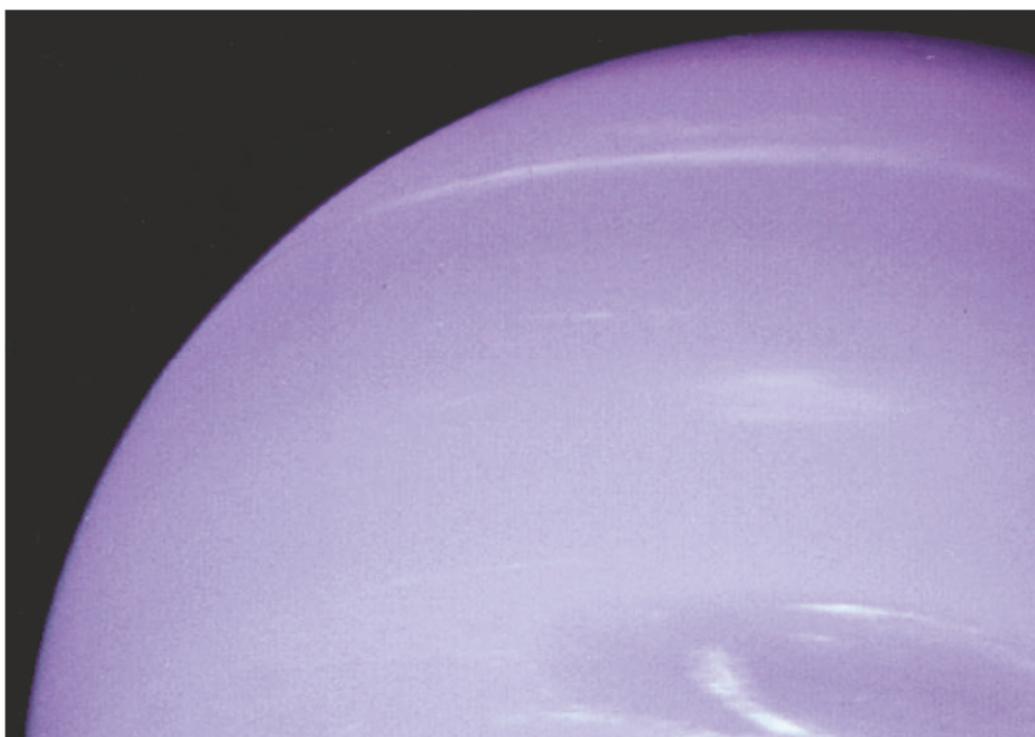
An expert panel charged with ending the debate over what is and isn't a planet has come up with a radical solution: end use of the term altogether, unless it is accompanied by a qualifier.

Debates on nomenclature are common in science, but the planet question is one of the few to have spilled into the public arena. Researchers have argued over the status of Pluto for decades, for example, with some claiming that it is not a fully fledged planet. Similar rows have raged in recent years over how to describe new additions to the Solar System. The panel could now be close to settling such matters. If it succeeds, works ranging from encyclopedias to children's books will have to be updated.

The panel's proposal, a copy of which has been seen by *Nature*, contends that the collection of objects currently dubbed planets, from rocky worlds on the outer shores of our Solar System to free-roaming objects in deep space, is too diverse to justify a single moniker. Instead, the researchers want to define different types of 'planetary object', such as terrestrial planets, including Earth, and extrasolar planets, which orbit stars other than the Sun.

"If we're going to use the word planet we should put an adjective in front of it," says Brian Marsden, a panel member and an astronomer at the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts.

The 19-strong group was convened last year by the International Astronomical Union (IAU), but speeded up its work this July when a media debate broke out over the status of another addition to the Solar System. The object, known as 2003 UB313, orbits near Pluto. One of its discoverers, Mike Brown of



the California Institute of Technology in Pasadena, who has recently been courting controversy regarding another discovery (see 'Planet spotters compete'), says it should count as a tenth planet, in part because it is larger than Pluto. But other astronomers say both UB313 and Pluto are simply large members of the Kuiper belt, a jumble of rocky and icy objects that orbits some 10 billion kilometres from the Sun.

The proposal, e-mailed to group members

on 12 September, would end such arguments. UB313 and Pluto would be known as Trans-Neptunian planets, a class roughly defined as large objects that orbit the Sun beyond Neptune. Other members of the Solar System would fall into the categories of terrestrial planets or gas giants, although Iwan Williams, the group's chair and an astronomer at Queen Mary, University of London, says that his team plans only to define the Trans-Neptunian class, and will leave other definitions to the IAU.

NASA

Planet spotters compete

How to define newly discovered mini-worlds is not the only question currently dividing planet hunters. Try this: is it proper for one scientist to Google another's research? A dispute over who is the true discoverer of a Pluto-sized object at the edge of the Solar System has raised questions about the ethical use of astronomical data posted on an open website.

On 29 July, a group led by Jose Luis Ortiz of the Institute of Astrophysics in Andalusia, Spain, reported sighting an object in the Kuiper belt, about 8 billion

kilometres from Earth. The Smithsonian Astrophysical Observatory's Minor Planet Center in Cambridge, Massachusetts, which fields such claims from astronomers, temporarily designated the object 2003 EL61, based on the Ortiz group's first observation of it in March 2003.

But astronomers led by Mike Brown of the California Institute of Technology, Pasadena, say they have been studying the object since December 2004, although they never announced it publicly. Brown says computer logs show that on

26 July 2005, someone accessed a public telescope database where information about his object was stored. A conference abstract written by Brown's team and posted on the Internet a week earlier contained a number that anyone with a web browser could use to access the record (*Nature* 436, 764; 2005).

Brown has now worked out that the person who accessed the database was a member of the Spanish group, and is crying foul. He has asked the International Astronomical Union, which

oversees the Minor Planet Center, to condemn Ortiz for stealing the discovery.

Ortiz has offered no public explanation for how he used Brown's information. But he says his group first noticed 2003 EL61 in its own two-year-old data on 25 July, a day before the US group's records were accessed. In a written statement to *Nature*, Ortiz defends his actions: "If in a revision process somebody uses Google to find publicly available information on the Internet...that is perfectly legitimate." **Tony Reichardt**



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NASA

Brain imaging ready to detect terrorists, say neuroscientists

Brain-imaging techniques that reveal when a person is lying are now reliable enough to identify criminals, claim researchers.

Critics maintain that the technique will never be useful for such investigations, arguing that, as with traditional polygraph detectors, liars could learn to fool the tests. And researchers in the field have previously admitted that the approach needs more work. But neuroscientists from the University of Pennsylvania School of Medicine in Philadelphia have now told *Nature* that they believe their test is ready for real-life scenarios.

Daniel Langleben and his colleagues use functional magnetic resonance imaging (fMRI) to track people's brains when they lie and tell the truth. By analysing brain activity during both scenarios, they have developed an algorithm that can detect lies from truth with 99% accuracy.

Team member Rugen Gur points out that, unlike the polygraph, fMRI does not rely on controllable symptoms such as sweating or a fast heartbeat. Instead it monitors the central nervous system. When someone lies, their brain inhibits them from telling the truth, and this makes the frontal lobes more active. "A lie is always more complicated than the truth," says Gur. "You think a bit more and fMRI picks that up."

In the latest study (C. Davatzikos *et al. Neuroimage*, in the press) the team gave volunteers an envelope with two cards and \$20; subjects could keep the cash if they lied convincingly in the tests. Once they were inside the fMRI scanner, each person had to press a button to indicate whether a card flashed on the screen matched one of theirs. They were asked to be honest about having one of the

cards and to lie about having the other.

Langleben has previously warned that fMRI is a research tool, not a way to spot liars. But the latest research has changed his tune. "We can't say whether this person will one day use a bomb," he says. "But we can use fMRI to find concealed information. We can ask: is X involved in terrorist organization Y?"

The main advance is being able to distinguish lies from truthful statements in a given individual. Although previously scientists could see how the brain lit up when people lied, results were based on the averaged brain activity of a group of people and did not look at individual fibs for each person. "Now we can tell when an individual lies on a specific question," says Gur. "This is a major step forward."

Critics argue that lab experiments do not equate to real-life situations. Getting a reward for concealing a lie is not the same thing as losing your job or getting a criminal conviction for being found out, which is a far more likely consequence, says Jennifer Vendemia, an expert in lie-detection research at the University of South Carolina, Columbia. "There is nothing you can do in the lab that would mimic job loss, the death penalty, or public humiliation."

But the biggest concerns about using fMRI to detect lies, says Vendemia, are over ethical issues, such as whether individuals have the right to keep their thoughts private.

Critics and researchers agree that more funding is needed to standardize the method and iron out ethical concerns before the approach is used routinely. The team's next step is to expand its studies to include women, people of different cultures, and psychopaths. ■
Jennifer Wild

Name game: some say the word 'planet' is used too widely for it to be a useful definition.

Williams hopes to send a final version of the proposal to the IAU within two weeks, after the team has reviewed it. But whereas the broad definition of planetary objects is uncontroversial, at least one member plans to dispute the names for subtypes. "I don't believe we should classify planetary types by location," says Alan Stern of the Southwest Research Institute in Boulder, Colorado. "We should use properties of the objects as a guide."

UB313 and Pluto would be better known as "ice dwarfs", Stern suggests, because such a definition "tells us more about the objects". He points out that stars are classified by their physical properties, not their location.

If the group can reach a consensus, it will be up to the IAU's executive committee to decide whether to accept the proposal. But will the public and scientists then change the names they use for Mercury and Mars? "Old habits die hard," says Jacqueline Mitton, an author of popular astronomy books based in Cambridge, UK. She points out that some astrophysicists still describe stars as either 'early' or 'late' types, terminology that was officially abandoned around 50 years ago. "Committees can make pronouncements, but they can't always change things," she adds. "It will take a very long time." ■

Jim Giles



Under fire: used properly, new brain-imaging techniques might assist in investigations of suspects.

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