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## One Find, Two Astronomers: An Ethical Brawl

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### Corrections Appended

When a group of Spanish astronomers reported in July that they had discovered a spectacular addition to the solar system, a bright ball of ice almost as big as Pluto sailing the depths of space out beyond Neptune, Michael Brown of Caltech chalked it up to coincidence and bad luck. His own group had been tracking the object, now known as 2003 EL61, for months but had told no one.

He sent the leader of the group, Jose-Luis Ortiz, of the Institute of Astrophysics of Andalusia, in Granada, a congratulatory e-mail message.

Now Dr. Brown has asked for an investigation of Dr. Ortiz's discovery, alleging a serious breach of scientific ethics. Archival records, he said, show that only a day before the discovery was reported, computers traced to Dr. Ortiz and his student Pablo Santos-Sanz visited a Web site containing data on where and when the Caltech group's telescope was pointed.

The information in these observing logs could have been used to help find the object on the Spanish images, taken more than two years ago, or simply to confirm that both groups discovered the same object. Depending on what the Spanish astronomers did, their failure to mention the Caltech observations could be considered scientific dishonesty or even fraud, Dr. Brown suggests.

In comments for his Web site ([www.gps.caltech.edu/~mbrown/planetila](http://www.gps.caltech.edu/~mbrown/planetila)), which includes a detailed timeline of the events surrounding the July announcement, he writes: "It is not clear from the timeline precisely what Ortiz and Santos-Sanz knew and how they used the records that they accessed. They were required by the standards of science, however, to acknowledge their use of our Web-based records."

In an e-mail message to Brian Marsden of the Harvard-Smithsonian Center for Astrophysics, who is director of International Astronomical Union's Minor Planet Center, the clearinghouse for such discoveries, Dr. Brown wrote on Aug. 15, "I request that Ortiz et al. be stripped of official discovery status and that the I.A.U. issue a statement condemning their actions."

Dr. Ortiz did not respond to numerous e-mail messages and telephone calls. Last week in an e-mail message to Dr. Brown, Dr. Ortiz neither admitted nor denied looking at the observing logs. Instead he criticized Dr. Brown's failure to report discoveries promptly to the Minor Planet Center, saying that his penchant for "hiding objects" had alienated other astronomers and harmed science.

"And remember," he said in the message, which Dr. Brown provided to The New York Times, "the only reason why we are now exchanging e-mail is because you did not report your object."

But Jose Carlos del Toro Iniesta, director of the Andalusian institute, said in an e-mail message that he intended to investigate Dr. Brown's allegations, adding, "I beg your understanding in separating clearly the institute as a whole from its individual members: the researchers' actions are their sole responsibility."

The spectacular allegation has flummoxed the International Astronomical Union. Saying that he and his colleagues had never been fooled before, Dr. Marsden admitted that the I.A.U. had no protocol for adjudicating such a dispute. Dr. Robert Kirshner, a Harvard astronomer and the president of the American Astronomical Society, said, "I don't think we have a method - other than public tantrums - to resolve these problems."

The imbroglio illustrates the ethical dangers and pitfalls of doing science in the Internet age, where a little clicking can bring you a shocking amount of information about what your colleagues and rivals are up to.

There is a long history of astronomers jealously guarding the coordinates of some celestial phenomenon while they try to figure out what it is, and of others trying to get in on the action. In 1930, when Pluto was discovered, the Lowell Observatory, home of the discoverer Clyde Tombaugh, withheld details of its location because they wanted to be the first to calculate its orbit.

Matthew Holman, a Harvard planetary astronomer, said that in the old days when the logbooks were real books sitting by the telescope, some astronomers would write down fictitious coordinates and objects to cover their tracks.

With electronic records, Dr. Brown said, "It's important for scientists to discuss what's O.K. and what is not." Richard Pogge, an Ohio State astronomer who uncovered the apparent breach, said that scientists had long lived mostly successfully by a kind of honor system. Astronomers, he said, routinely serve on time allocation committees for telescopes and peer review panels without stealing one another's ideas. "It allows us to have an open, collaborative community," he said.

The idea that someone could abuse that openness, he said, "goes to the whole idea of trust in our community."

Dr. Brown, with his colleagues David L. Rabinowitz of Yale and Chadwick A. Trujillo of the Gemini Observatory in Hawaii, is currently famous as the discoverer of the "10th planet."

Dr. Ortiz, who received his Ph.D. from the University of Granada in 1994 for work on the clouds of Jupiter and Saturn, is not as well known. Glenn Orton, of Caltech's Jet Propulsion Laboratory, where Dr. Ortiz worked as a postdoctoral fellow, called him "an impressive worker" and said he had recommended him for several jobs over the past years.

Since 2002, Dr. Ortiz and his colleagues have been looking for so-called trans-Neptunian objects in the outer solar system with a brace of small telescopes at the Sierra Nevada Observatory, in Granada.

The EL61 object appears to have been their first big hit. According to Dr. Ortiz, it was first spotted on July 25 by Mr. Santos-Sanz as a slow-moving object on images taken in March 2003. He e-mailed this news to the Minor Planet Center on July 27, but it attracted no attention, partly because there was not enough information to tell other observers where to look for it.

The next night Dr. Ortiz reported that his group had been able to trace the object on various old photographs back to 1955, enabling a group at the

Astronomical Observatory of Mallorca to observe it.

After checking for themselves that the object was real, Dr. Marsden's team disseminated the details to the rest of the astronomical world on its own Web site and by e-mail.

The new body would have been a prize for any astronomer. At the time it was the brightest and largest object - next to Pluto - yet found in the Kuiper belt, a ring of debris that stretches out beyond Neptune.

Except that it had already been discovered.

Dr. Brown had planned to report the object, which his team had discovered in December 2004 and nicknamed Santa, at a meeting last week. In fact, he had described it in abstracts sent to the American Astronomical Society, abstracts available to anyone with a computer and familiarity with astronomical jargon, only a week before, on July 20.

Dr. Ortiz's report raised eyebrows at the astronomical union because he and his telescopes were relatively unknown and because two years had elapsed since the discovery pictures were taken. Struck by the similarity of the objects and the close timing of Dr. Ortiz's announcement, Dr. Marsden said he had told Dr. Brown that he was worried that a leak might have occurred.

In fact, Dr. Brown himself had inadvertently made such a leak possible.

In the abstracts he referred to "Santa" by a code name, K40506A, which was the same code name his team had used in its observing logs. As a result, as Dr. Brown discovered to his horror the night of Dr. Ortiz's announcement, any astronomer who read the abstracts and typed "K40506A" into an Internet search program would be taken to a Web site containing the observing logs of Smarts, the Small and Moderate Aperture Research Telescope System. It was one of those telescopes, at the Cerro Tololo Inter-American Observatory in Chile, that Dr. Brown and his colleagues were using to track the object.

The telescope is one of four owned by a consortium of universities and operated by two observing assistants at the observatory. The Web site, which is public, does not contain data obtained during observations but does tell where the telescope was pointed.

Shaken by that news that his observations were so accessible, Dr. Brown hastily called a news conference to announce his ace in the hole, a new planet bigger than Pluto, at 7 p.m. on Friday, July 29, "Perhaps the single best time to announce news that you want no one to hear," as he put it on his Web site.

In an e-mail message, he apologized to Dr. Ortiz ahead of time for being about to overshadow him.

Nevertheless questions lingered among minor planet astronomers about whether Dr. Ortiz's group might have helped themselves to Dr. Brown's observing logs, suspicions that Dr. Ortiz found irritating.

"I do not enjoy the distrust on our work and so much questioning," he wrote to Daniel Green of the astronomical union on Aug. 5 in an e-mail message, which Dr. Green provided to The Times.

But now evidence has been offered that Dr. Ortiz and his group did access the observing logs. Prompted by questions by Dr. Rabinowitz of Yale, one of Dr. Brown's team members, Dr. Pogge, who maintains the Smarts telescope Web site, decided to investigate the traffic on the site.

He found that computers from an unfamiliar address had visited the Web site eight times from July 26 to 28, when the Spanish group was making its announcement. Each time the computers went straight to pages deep within the site that described the Brown group's observations of K40506A.

The first three visits happened a few minutes apart early on July 26, a day and a half before the Ortiz group made its announcement. Another cluster of hits came on the morning of the July 28 before the object was observed in Mallorca and Dr. Ortiz made his more complete report to the astronomical union.

Dr. Pogge was able to trace the computers through the so-called IPP numbers, which the Internet assigns to each computer on it. Those numbers eventually led him to the Web site of the Andalusian Institute. Dr. Pogge said he gasped out loud when it popped up.

"I remember saying, 'Oh no, oh no, oh no,' over and over again," he said.

Moreover, the IPP numbers of the intruders match the numbers on the e-mail messages Mr. Santos-Sanz and Dr. Ortiz sent to the Minor Planet office, according to Dr. Marsden. Dr. Pogge called Dr. Brown on Aug. 8. Dr. Brown in turn sent an e-mail message to Dr. Ortiz asking for an explanation, but by then all of Spain seemed to be on vacation.

It was not until early this month that Dr. Iniesta and Dr. Ortiz wrote back, the latter to say that he was still on vacation and saw no need to respond further until Sept. 15.

In the absence of further information, exactly what Dr. Ortiz did with the observing logs is likely to remain a mystery. Were he and his colleagues only checking to see if Dr. Brown's object was the same as theirs to confirm their own discovery? Or did they use the information to find the object and beat the Caltech team?

Both actions would violate scientific ethics but with varying degrees of seriousness, astronomers said.

John Huchra, an astronomer and the vice provost for research policy at Harvard, said that at some level it is all right to use knowledge of what a rival group is doing. "If you hear them give a talk at a conference, it's fair game," he said, "but if you found it in the trash bin or the copier, that's not kosher."

If you used tainted information to beat out the other group, he said, the director of the observatory (the only authority in this system) could forbid publication and banish you from the telescope. "If they were just confirming," he went on, "there's still a tinge here. It's not kosher to point your telescope at somebody else's object, unless you ask."

Ben Oppenheimer, an astronomer and extrasolar planet hunter at the American Museum of Natural History, said that he thought it was unethical to use tainted information in any way, but added: "It's a borderline case, though, because the logs were public. I don't know why that information was so freely available."

One complicating factor is that professionals like Dr. Brown tend to nurse their work along in private until they are ready to publish a major scientific

paper. This practice has sometimes created tension among the minor planet observers, including a large number of amateurs who take pride in spotting comets, uncharted asteroids and other objects before the professionals. In his response to Dr. Brown, Dr. Ortiz offered to collaborate with him on the naming of 2003 EL61 if Dr. Brown would change his secretive ways.

Dr. Brown called Dr. Ortiz's e-mail message "astonishing."

Regarding the practice of guarding his data, he said, "This is what every single scientist does every day of their lives."

Dr. Marsden pointed out that Dr. Brown had advanced science while he was keeping his "Santa" object under observation. He discovered that it has a moon, nicknamed Rudolph, allowing him to calculate the object's mass - about one-third that of Pluto.

Moreover, he did report it, said Dr. Marsden, citing the abstracts.

"I don't blame him for wanting to finish the job," Dr. Marsden said. "You do the whole thing. That is how astronomy is done, or used to be done."

Dr. Marsden, who is secretary of astronomical union's committee for naming small bodies, said that he would suggest to Dr. Brown that he propose names for both 2003 EL61 and its satellite.

**Correction:**Sept. 14, 2005, Wednesday:

An article in Science Times yesterday about a dispute between astronomers over credit for the discovery of 2003 EL61, a large icy object in the outer solar system, misstated the term for the identification number assigned by the Internet to every computer. The number, by which American astronomers were able to trace a Spanish group's visits to their Web site before the discovery was announced, is called an IP address (for "Internet protocol"), not IPP numbers.

**Correction:**Sept. 18, 2005, Sunday:

An article in Science Times on Tuesday about a dispute between astronomers over credit for the discovery of 2003.EL61, a large icy object in the outer solar system, misstated part of the name of the professional group headed by Robert P. Kirshner, who said, "I don't think we have a method—other than public tantrums—to resolve these problems." It is the American Astronomical Society, not association.