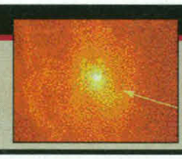


PAGE 566
Whimpers from a dying quasar

568
How endangered are Yellowstone grizzlies?

SCIENTIFIC ETHICS

Two Former Grad Students Sue Over Alleged Misuse of Ideas

Not long ago, it would have been unusual for a student to accuse a senior faculty member of misconduct—and almost unheard of to back up the accusations with a lawsuit. But the culture of academia may be changing. Several years ago a nutritionist sued the University of Alabama, Birmingham, and faculty over alleged misappropriation of her graduate school research (*Science*, 31 January 1997, p. 610). Now, two former Ph.D. candidates have sued professors, alleging misappropriation of research and charging the universities with complicity.

Both new cases—one involving Cornell University and the other, Columbia University—revolve around the prickly academic issue of who owns ideas, especially in the unequal pairing of professor and student. The universities say that's not a question for the courts to decide, but the students say that academic grievance procedures failed them. Both cases could come up for review this spring in state courts. Cornell and Columbia, which investigated and dismissed the complaints, say they acted properly and predict the courts will side with them.

Antonia Demas
PLAINTIFF
against
vs.
David Levitsky & Cornell University
DEFENDANTS

In the most recent suit, filed on 29 March, an education researcher from Cornell, Antonia Demas, claims that a member of her thesis committee misappropriated her ideas on teaching nutrition, then used them to get a research grant. Demas, formerly a nutrition consultant, began working on a Ph.D. in Cornell's department of education in 1991. In her complaint she says that she hoped to validate a method of teaching children about unfamiliar but healthy foods by cooking them in the classroom, then serving the food in school lunches. Demas says she also developed a method of measuring the children's responses.

Demas claims that in 1993, Cornell nutrition professor David Levitsky "pushed" to be added to her committee of Ph.D. advisers, partly because he hoped to use her study group for obesity research. Demas agreed. She contends that Levitsky never completed the obesity study, but within a year, he began taking credit for her work in lectures and interviews. Eventually, she claims, Levitsky used her research in a grant application, failed to credit her properly, and shut her out of the project. She did, however, receive a Ph.D. from Cornell in 1995. Levitsky, who denies these allegations, declined to comment on grounds that doing so might affect the litigation.

Demas took her complaints to the Cornell ombudsman in 1995. After a review, the ombudsman issued a ruling that Levitsky should co-author a paper with Demas. But that never happened. Demas, still seeking redress, appealed to the dean of faculty, Peter Stein. Nothing happened, her brief says, until the three original members of her thesis committee—who have taken her side throughout the dispute—personally intervened. Stein then conducted an inquiry. Stein confirms that in May 1996 he found that 22 of the 23 allegations against Levitsky were not covered by the scientific misconduct rules of the Department of Health and Human Services. He dismissed them. He asked that one allegation be investigated further; it was later dismissed. Stein referred other ethical questions to other deans, who imposed no sanctions.

The main question, Stein now says, is whether a professor can use a student's ideas as the basis of his own research grant. It would be wrong to do so, Stein says, if the student had not published the work or received credit for it. But in this case, Stein says, Demas had published her thesis. Using ideas in the public domain is not misconduct, Stein says, even if it preempts a student from getting a grant. In his report, Stein wrote that "Levitsky's preemption of Demas's ideas (i.e., the concept and the recipes) lies within the boundary of permissible academic entrepreneurial behavior and does not warrant further investigation."

Last month, Demas's attorneys filed a 58-page complaint charging Levitsky and Cornell with a litany of misdeeds, including fraud and "breach of fiduciary duty." Cornell's counsel, James Mingle, says the university will ask the court to dismiss the complaint because it has no merit, and, in any event, this type of academic disagreement "is not actionable."

Columbia's attorneys are battling a similar complaint brought by a former Columbia mathematics student, Sheng-Ming Ma, against former mathematics department chair Duong Phong. In a complaint filed in March 1998 in the New York Supreme Court for New York City, Ma claims Phong took a math proof he had done as a thesis project and published it as his own in a paper co-authored with Elias Stein of Princeton University. Phong has denied the allegation in a response to the suit.

Ma's complaint alleges that Phong assigned Ma a problem for his thesis on a mathematical topic involving oscillatory integrals and that he finished a proof in 1995. Phong first rejected the work as flawed, Ma's brief says, but encouraged the student to continue and even suggested that the two might co-author a paper. Later, in March 1997, Ma says, Phong told him the manuscript was "totally wrong" and urged him to focus on another topic.

Ma claims that he sent his draft to other mathematicians for advice. One of them, Stein, gave him a "terrible shock," Ma says: Stein wanted to know why Ma was working on a problem that he and Phong had recently solved and were planning to publish in *Acta Mathematica*. Stunned at first, Ma says, he soon accused Phong and Stein of plagiarizing his work. Ma acknowledges that his work was not completely original: Phong and Stein had been working on this topic since 1991. But Ma claims that Phong had

set this specific problem aside by the time his thesis work began.

Ma sought help from Columbia administrators and others to stop publication of the paper. But few could understand the text, and nearly all the mathematicians Ma contacted sided with Phong. They told Ma that his thesis work was inadequate, and that he was wrong to claim that the Phong-Stein paper, which *Acta Mathematica* published in November 1997, was plagiarized.

At Ma's insistence, graduate school dean Eduardo Macagno looked into the case, reviewing comments by Phong, Stein, two other Columbia mathematicians, and a Harvard mathematician. Macagno concluded that no plagiarism had occurred. The math department told Ma that he would have to apologize to Phong before he would get a new mentor and that without a mentor, he would have to leave. Ma refused, and Columbia dismissed him in 1997. For a time, Ma says, he worked at a Subway sandwich shop. But, with two master's degrees in math from Columbia, he found a computer-related job. He filed suit in 1998. Mathematician Lawrence Alan Shepp of Rutgers University in New Brunswick, New Jersey, is supporting Ma's case but says others must judge whether Ma's work is correct.

Phong declined to comment. Stein says that Ma's argument is "without merit." It was Ma who used his professor's ideas, Stein says, not the other way around: Ma's "got it upside down." He recalls that Phong tried to get Ma to work on a different and difficult subset of the problem the two professors were working on, but that Ma, making no progress, decided to try to duplicate their efforts.

Columbia is asking to have the suit dismissed because it claims to have made a "diligent, complete, and unbiased" investigation before rejecting the complaint. The university also argues that Ma is trying to involve the court in "purely academic decisions" which New York has "repeatedly held to be beyond judicial review." Finally, the university suggests that mathematical principles cannot be plagiarized in any case because they "simply cannot be copyrighted."

If the case does go to trial, it could create a unique problem: The judge, and possibly a jury, might be asked to rule in a few days on who contributed what to a complex scientific proof—the kind of controversy that can take years to resolve among mathematicians.

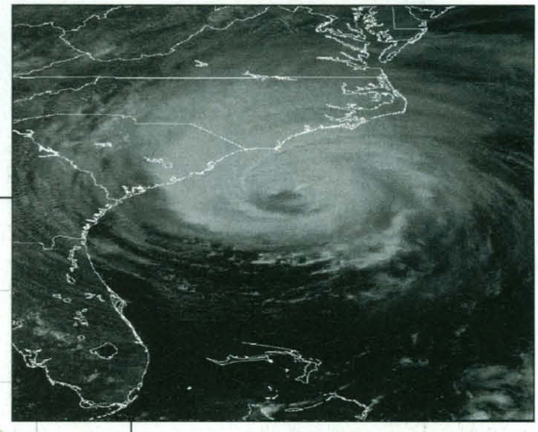
–ELIOT MARSHALL

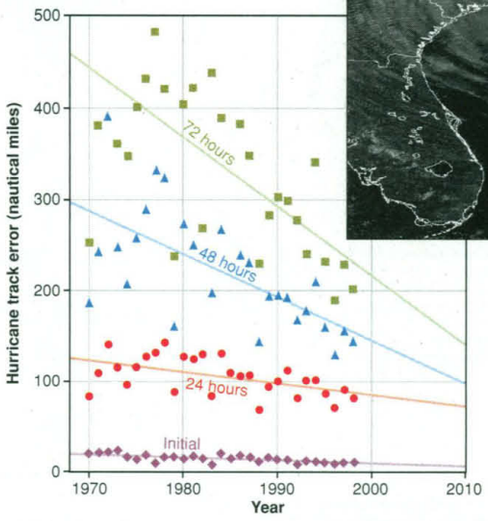
SOURCE: COLIN MCADIE/NHC

WEATHER

Forecasters Learning to Read a Hurricane's Mind

Hurricane forecasting has come a long way since one sneaked up unannounced on Galveston Island, Texas, in 1900 and killed 8000 people. Nowadays, meteorologists know when a storm is on its way, but predicting just where it will hit land still isn't easy. For most of the past half-century, forecasters have struggled to narrow their predictions of a hurricane's next move, but as recently as the 1970s, guesses of a hurricane's position 24 hours ahead of time were off by an average of more than 200 kilometers. Now hurricane researchers finally have something to celebrate.





Shrinking errors. Forecasters have been predicting the path of hurricanes like 1996's Fran (photo) with increasing accuracy, especially since mid-decade.

"It's been a pretty exciting 5 years," says hurricane specialist Russell Elsberry of the Naval Postgraduate School in Monterey, California. Better observations of the streams of winds that carry hurricanes toward land are feeding new computer models for predicting how those winds will shift. And, as recent analyses—including one in last month's *Bulletin of the American Meteorological Society*—show, these new tools are getting results. "It's quite clear that the [U.S.] National Hurricane Center has been making much improved track forecasts" of future storm movement, says Elsberry. The new forecasting skill means that crowded coasts will have more time to prepare for storms, and warnings can be limited to smaller sections of coast, saving millions of dollars on unnecessary evacuations.

Hurricane forecasting has spent a long time in the doldrums. In the 35 years after record keeping was begun in 1954, forecasts of a storm's position 24 hours in the future improved by only about 1 kilometer per year, even after satellite images made it easier to track the position, winds, and extent of a hurricane. One problem was that neither satellite images nor the scattered data from weather buoys and ships offered many clues about the stream of air surrounding a storm, which determines its speed and direction.

"There is no substitute for in situ observations," says meteorologist Kerry Emanuel of the Massachusetts Institute of Technology. For 15 years, researchers had been collecting those observations by flying aircraft near the storms and releasing instrumented packages called dropwindsondes—a sort of weather balloon in reverse that radios back wind speed and direction, temperature, pressure, and humidity as it falls. But those efforts were sporadic until 1997, when the National Weather Service (NWS) made such observations routine and introduced a new dropwindsonde that tracks itself using the satellite-based Global Positioning System, allowing more precise wind mapping. The NWS also acquired a Gulfstream-IV jet, which could fly higher and faster around storms than the traditional hurricane-hunter aircraft, probing more of the nearby atmosphere.

In the March *Bulletin of the American*