SCIENTIFIC MISCONDUCT

Chinese Researchers Debate Rash of Plagiarism Cases

BEIJING—Chinese scientists are working hard to be internationally competitive in basic research. But the country may have already caught up with the rest of the world in one measure of modern science—scientific misconduct. Three recent cases of plagiarism have triggered a vigorous public discussion of the problem and how institutions should respond.

Similar discussions have been a staple in the West for more than a decade. But in China they are also tinged with concern that poor language skills may influence a scientist's ethical conduct, not to mention the scientist's ability to compete internationally. Indeed, the first national airing of one case, a recent article in a prominent journal affiliated with the Chinese Academy of Sciences (CAS), acknowledges those additional demands on Chinese scientists in its title: "A Problem of English or of Science Morality?"

The article, in the August issue of *The Journal of Dialectics of Nature*, discusses the case of Pan Aihua, who worked in the National Laboratory of Protein Engineering and Plant Genetic Engineering, College of Life Sciences, Peking University. In 1994, he and five co-authors published a paper in a Dutch-based journal, *Plant Molecular Biology* (*PMB*), on efforts to genetically manipulate the resistance to heavy metals of tobacco and other agriculturally important plants (vol. 24, p. 341).

"Heavy metal tolerant transgenic *Brassica napus L.* and *Nicotiana tabacum L.* plants," by S. Misra and L. Gedamu

The first article, in *Theoretical Applied Genetics*, 1989

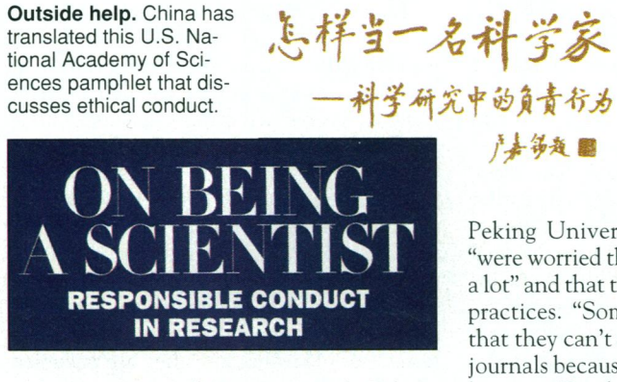
In their August article, biologists Li Peishan, former deputy director of the CAS Institute for Natural Science History, and Xue Pangao, former senior engineer of the CAS Bureau of Biological Science and Technology, note that nearly one-third of the *PMB* text is identical to a 1989 paper by two Canadian researchers (*Theoretical Applied Genetics*, vol. 78, p. 161). They add that, because the PMB authors work in a national laboratory funded by the State High-Technology Program, "the act of plagiarism has gone beyond an individual's responsibility and has damaged our country's scientific reputation." Interest in the case has been heightened by the fact that one of the co-authors is Chen Zhangliang, the university's vice president and one of the country's most prominent young molecular biologists.

The incident first came to light, say Peking University sources, after Santosh Misra of the University of Victoria, British Columbia, alerted the journal to "disturbing" similarities between Pan's paper and her 1989 article. The *PMB* editor, Robert Schilperoot of Leiden University in the Netherlands, then wrote Pan that he "cannot do otherwise than support the view of Dr. Misra" that plagiarism had been committed.

Pan and Ru Binggen, his mentor and co-author, defended the paper in a reply to Schilperoot. "There is a significant degree of identity in the wording," they admitted, but the charge of plagiarism is not valid "because we have all the original data."

Schilperoot accepted an invitation from Peking University to investigate the matter and then presented his conclusions in an editorial (*PMB*, vol. 28, p. v.). Although he found that the data in the *PMB* paper are "from original work carried out in Prof. Ru's laboratory over several years," Schilperoot adds that "it is not acceptable practice to copy text—not even small passages—from published materials without reference." In the wake of the inquiry, Pan was removed from his research position at the College of Life Sciences and named general manager of a university-owned biotechnology company based in the southern economic boomtown of Shenzhen. He maintains that his actions were a result of his limited knowledge of English and were not a breach of scientific ethics.

Outside help. China has translated this U.S. National Academy of Sciences pamphlet that discusses ethical conduct.



[from the Discussion section] ... Our approach of conferring heavy metal tolerance by a stable integration and expression of a single gene coding for a heavy metal binding and/or sequestering protein clearly demonstrated that plants can be genetically engineered for heavy metal tolerance. ...

Familiar words. This passage from a 1994 paper is one of several that are identical to what appeared in a 1989 paper.

"Expression of mouse metallothionein-I gene confers cadmium resistance in transgenic tobacco plants," by A. Pan *et al.*

The second article, in *Plant Molecular Biology*, 1994

Speaking recently with *Science*, Schilperoot says Peking University officials told him they "were worried this sort of plagiarism happens a lot" and that they are eager to root out such practices. "Some Chinese scientists think that they can't compete equally in Western journals because of a problem with English," he says. "So they like to copy what others have done and then fill in what is new. ... To many people, what was done is not considered an aberration but part of an attitude that says it's OK to copy as long as you've done the work yourself."

The investigation was an administrative hot potato for Chen, a co-author on the paper as well as the official in charge of overseeing the outside inquiry. "I think it was a mistake for him to be a co-author without looking more closely at the paper," says Schilperoot. Chen was not available for comment, but his colleagues say that he has told them he does not remember the paper and that his contribution was minor. At the same time, Schilperoot gives Chen high marks for making sure that he had access to the relevant people and materials for his investigation. "Dr. Chen was very careful not to interfere," says Schilperoot. "I think he's part of the new generation that is pushing to adopt Western standards."

Repeat performances. The Pan case is the third incident since 1993 of apparently blatant plagiarism by Chinese scientists. The first involved Li Fubin, then a lecturer in physics at China Mining University at Xuzhou in eastern China's Jiangsu province. In his pursuit of promotion to associate professor, Li copied the whole text of a paper co-authored by a Turkish professor and an Italian scholar from a physics journal published in Italy. Li then submitted the copied article, under a new title, to a Swiss physics journal, which published it in 1990.

The scandal was first exposed by He Zuoxiu and Hao Bailin, two leading Chinese theoretical physicists, in *Chi-*

nese Science News, a triweekly publication of CAS. Their investigation revealed that two of the 25 papers Li claimed he had published in foreign academic journals when applying for promotion and funding were identical to previously published papers, and the rest were fictitious. Li later confessed to his misconduct and issued a personal apology in the newspaper. The repercussions were severe: The National Natural Science Foundation (NNSF) declared that he was permanently ineligible for funding, and the university stripped him of his title and put him on probation for a year. Li then quit and left academic research.

The second case of alleged plagiarism, also exposed by *Chinese Science News* earlier this year, involved Wang Ruidan, an associate professor of physics in Hunan Normal University, Changsha. According to the investigation by university authorities and *Chinese Science News*, Wang copied six papers already published by Ma Dongping of the physics department of Sichuan Union University and submitted them last fall to the *Journal of Chemistry and Physics*, where Ma saw them while reviewing manuscripts at the request of the Chinese journal's editor.

Ma wrote to both the newspaper and the university. As a result of their investigation, Wang was demoted to lecturer and his false "achievements" were erased from his files. Explaining the punishment, Jiang Fasheng, vice chair of the physics department of Hunan Normal University, says "we all agree that plagiarism is a shameless act. But Wang used to be a hard-working teacher, and demotion is quite a severe punishment for him."

What to do. Although Chinese officials took swift action in these cases, there is no consensus on the best way to reduce or eliminate such unethical behavior. Part of the reason, as is true around the world, is the difficulty of knowing the extent of the problem.

Chen-Lu Tsou, a member of CAS and honorary director of the National Laboratory of Biomacromolecules in Beijing, believes that those involved in plagiarism and other acts of misconduct "are very few in number." But Fan Hongye, a research fellow with the CAS Institute of Science Policy and Managerial Science who has been studying the issue, says that the incidence of misconduct is not clear because "nobody has conducted a survey." As for the likely reasons behind such conduct, a 1992 poll by Fan of 530 scientists, science journal editors, and research program officers offered these familiar explanations: "to seek instant fame, or to maintain or be promoted from their positions in the face of fierce competition."

The government has warned institutions to watch out for plagiarism, fabrication, or falsification of data. In 1991, Song Jian, Minister of the State Science and Technology Commission, told NNSF officials that "whenever such a phenomenon occurs, investigations must be conducted and due punishments imposed." CAS President Zhou Guangzhao earlier this year wrote a number of articles on the topic, encouraging scientists and journalists to expose misconduct through the media. But officials have not drawn up any blueprint for action.

Indeed, conducting those investigations isn't easy, says He, one of the 37 scientists who signed a letter on the topic that appeared earlier this year in the Beijing-based *Guangming Daily*, a national newspaper circulated among intellectuals. Plagiarists often send their copied papers to second-rate journals, he says, making their misdeeds harder to detect. Investigators must be trained in the relevant field, he adds, and they must be willing to spend the time to conduct a thorough inquiry. "Most scientists are reluctant to delve into such time- and energy-consuming investigations," says He, "because they are occupied with their own research."

Although Fan's survey indicates that plagiarism and other misconduct in scientific research arouse general indignation among scientists, most think that the present structure is capable of dealing with the problem. Only 16% of the respondents to Fan's survey felt that "an official monitoring body should be set up," with 61% preferring that "existing organs be enhanced." At the same time, most scientists call for increased training of young researchers. Toward that end, earlier this year CAS received permission to publish a Chinese version of the pamphlet, "On Being a Scientist: Responsible Conduct in Research," first issued in 1989 by the U.S. National Academy of Sciences, National Academy of Engineering, and Institute of Medicine.

In a Chinese newspaper review of the pamphlet, He calls it "a significant inspiration in our effort to discipline scientists at a time when various material temptations tend to lure some of them into irresponsible conduct." And CAS has made sure that material considerations don't interfere with its message: The book sells for about 80 cents.

–Li Xiguang and Xiong Lei

Li Xiguang and Xiong Lei are reporters with China Features.

SCIENTIFIC MISCONDUCT

Swift Justice Salvages Reputations

In a perfect world, scientists who had faced and were cleared of misconduct charges would emerge with their reputations unscathed. But a new survey commissioned by the Department of Health and Human Service's Office of Research Integrity (ORI) suggests that this is not always the case. While 57% of researchers exonerated of misconduct charges said they had not suffered lasting professional damage, 39% said they were still dealing with the consequences.

The survey, based on questionnaires completed by 54 of 108 people with closed cases at ORI, was conducted by the Research Triangle Institute in North Carolina. It found that 60% of those surveyed had experienced at least one negative professional consequence stemming from the fraud charges. Seventeen percent reported a severe impact, such as losing a job, or being passed over for a raise or promotion, while 43% suffered less serious consequences, such as receiving fewer invitations to chair meeting sessions and ostracism by colleagues. Negative personal consequences were even more common: Fully 78% of the respondents said the accusations had taken a toll on their mental well-being.

How institutions handle misconduct cases seems to have direct bearing on the extent of the professional stigma. Cases that attracted publicity and involved many parties, including attorneys, were more likely to do lasting damage. That suggests institutions should conduct speedy investigations and work harder to keep information about charges from leaking out, the report says.

Institutions also could do a better job of restoring exonerated researchers' reputations, the report concludes. Lawrence Rhoades, director of ORI's Division of Policy and Education, says that is usually done by cleaning up the individual's personnel file and notifying those involved of the case's outcome. Still, he says, "there is a real question as to how to restore a reputation."

–Jocelyn Kaiser

EFFECTS ON PROFESSIONAL LIFE	Negative	No Effect/ Uncertain	Positive
Professional Reputation:	46%	52%	2%
Job Mobility:	30	68	2
Presenting Papers:	39	57	4
Publishing Papers:	9	85	6
Income:	18	80	2
Promotions:	15	83	2
EFFECTS ON PERSONAL LIFE			
Physical Health:	48%	50%	2%
Mental Health:	78	18	4
Marriage:	22	69	9

From the Research Triangle Institute's "Survey of Accused but Exonerated Individuals in Research Misconduct Cases," available by calling 301-443-3400.