

STATE OF THE ART

A SURVEY OF TECHNOLOGY AND SOCIETY, BY THE EDITORS

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China's Phony Science

Exposing Corruption, Plagiarism, and Fraud

The fall from grace of Chinese computer scientist Chen Jin made international headlines when, after being hailed as a national hero in 2003 for developing a powerful new microchip, he was fired from Jiaotong University for faking his findings, having appropriated a pre-existing microchip from Motorola. Less widely reported were the allegations earlier this year that Wei Yuquan, vice-president of Sichuan University and a member of the Chinese Academy of Sciences, had fabricated data in two articles on cancer immunology. Pathologist Si Lusheng told the *Christian Science Monitor* that when he became suspicious and asked for evidence to verify the claims in Wei's studies, he was refused and began to receive threatening phone calls. "I got involved to warn younger scholars of

the harm of falsifying research," Si told the *Monitor*. "The faking is obvious, everyone knows it."

Also not widely reported in the West is the case of Qiu Xiaoqing, a Sichuan University professor accused last year of faking research for a 2003 article in the major journal *Nature Biotechnology*; six of Qiu's coauthors asked the journal to remove their names from the article, saying they were "shocked by this scientific fabrication" and that they were manipulated by Qiu, who exploited their limited ability to understand English.

Nor is the case of Liu Dengyi well known outside of China. The vice president of Anhui Normal University, Liu was accused in 2005 of falsely claiming authorship of four papers in scientific journals. Three of those papers never even existed. After the accusations

appeared online, the papers disappeared from Liu's résumé, but he did not face any disciplinary action.

These stories have not attracted much attention in part because plagiarism and scientific fraud in China are simply not very newsworthy. They happen with surprising frequency as the country, undergoing a massive economic boom, turns its attention to scientific development. China's research budget is set to quadruple in the next fifteen years, with the increased funding mostly directed into centralized "megaprojects" in high-profile fields such as nanotechnology, which a policy expert at the Chinese Academy of Sciences hopes will transform China "from the largest developing country to a world powerhouse," and space exploration, which is a matter of intense national pride. Aiming to reduce the country's dependence on foreign imports, Beijing's latest five-year plan emphasizes scientific and technical "innovation."

Unfortunately, the work of some Chinese scientists has proven to be the opposite of innovative: sloppy, copied, or nonexistent. National hopes of becoming an overnight scientific superpower have put pressure on Chinese scientists to produce breakthroughs at a rate that often seems to exceed the time and care necessary for responsible research. Academic evaluations and funding allocation are often based on the volume of studies published, with little regard to their quality or real significance. Unreasonable numbers of papers are expected of scholars who wish to keep

their jobs, with government panels reviewing them to ensure that state investments yield results. And two other major factors—an educational system that values near-total obedience to superiors at the expense of critical thinking skills, and the infamous state of China's intellectual property rights protections—contribute to a culture where plagiarism is rarely reported and even less frequently punished.

The problem affects more than just the sciences; other academic disciplines are implicated as well. A cover story in *China Newsweek* on "The Abnormal Corruption of Higher Education" (translated and graciously provided to *The New Atlantis* by American journalist Paul Mooney) estimates that 530,000 published papers in "key journals" will be *required* of graduate students in the coming year. Of those, the magazine reports, perhaps 20,000 will genuinely merit publication in China's 1,500 recognized academic journals, while the authors of the rest will resort to either bribery or "black market" counterfeit journals. And, as described in *China Daily*, in a recent Ministry of Science and Technology survey of 180 Chinese Ph.D.s, a whopping 60 percent admitted to paying to have their work published, and another 60 percent copped to plagiarizing the work of others.

Another common practice is to post nonexistent papers on a curriculum vitae, as was alleged against Liu Dengyi in the example described above. At least two other prominent researchers—Liu Hui, dean of Tsinghua University's

medical school, and Yang Jie, dean of life sciences and technology at Tongji University—were both recently dismissed from their posts for falsifying their résumés. But by many accounts, exposure and punishment is the exception. University administrators, fearing public embarrassment as well as loss of funding, have a distinct incentive to ignore malfeasance. And without institutional support, scientific peers are discouraged from calling each others' work into question.

In May 2006, in an "Open Letter on Research Integrity in China," 120 U.S.-based Chinese scientists called for China to establish "fair rules and official mechanisms to maintain and safeguard the integrity of scientific research in China," including oversight at both the institutional and governmental levels. The letter also called for mandatory courses on research ethics, and a system of due process to avoid malicious slander and protect the innocent until proven guilty. The Ministry of Science and Technology responded slowly, first claiming no knowledge of the letter, then later issuing a vague promise to reform funding allocation and oversight. Perhaps worried that the trickle of international coverage of the scandals would turn into a torrent, in early July the ministry made a stronger announcement, pledging to publicly shame scientists convicted of fraud.

Meanwhile, the democratization of information over the Internet—to the extent that it remains uncensored and uncontrolled in China—has allowed

public awareness of the country's science scandals to grow. The clearing-house for information on the plagiarism controversy is "New Threads," a website which has documented over 500 allegations of scientific fraud, operated by Fang Zhouzi, a U.S.-trained biochemist whose real name is Fang Shimin. The website (XYS.org) is blocked inside China, but its content is accessible in the country through mirror sites. Dr. Fang credits New Threads with the dismissals of Liu Hui and Yang Jie, Hefei University professor Yang Jingan's expulsion from the Communist Party for plagiarizing foreign papers, and the expulsion of several graduate students. New Threads publishes daily updates of misconduct, often receiving tips from lab insiders who are afraid to speak up for fear of losing their jobs. Dr. Fang notes, in an e-mail to *The New Atlantis*, that although he will not publish an informant's name without his or her permission, he does not allow anonymous submissions, and requires supporting evidence and some of his own sleuthing before making any accusation public.

Nevertheless, some critics have argued that Dr. Fang's work is only making the situation worse. One online article—asking "Who's watching the watchers?"—cites some scientists concerned that New Threads may harm the reputations and careers of innocent researchers. When published allegations prove groundless, as has happened on a few occasions, Dr. Fang tells us that he publishes a correction and apology. In any case, the vast

majority of accusations result in neither conviction nor acquittal; exposed scientists rarely face any repercussions at all in a country where the government does not even acknowledge the existence of the watchdog website.

Dr. Fang predicts that media attention could pressure the government into establishing an agency to investigate and punish allegations of misconduct, but that such a body would likely face the same internal corruption and disarray as other government agencies. “The procedure to investigate

misconducts and corruptions should be fair and open, and the findings must be available to the public,” he tells us. “Scientific misconduct in China is also a political and social problem. Before we can solve the problem, the Chinese society must have a radical change.... We will need to have a democratic government, independent scientific and educational institutions, and free press.” Without such radical changes in the country, Dr. Fang warns, the future of Chinese scientific innovation looks bleak.