POLICY FORUM: SCIENTIFIC PUBLICATIONS

The Challenge for Chinese Scientific Journals

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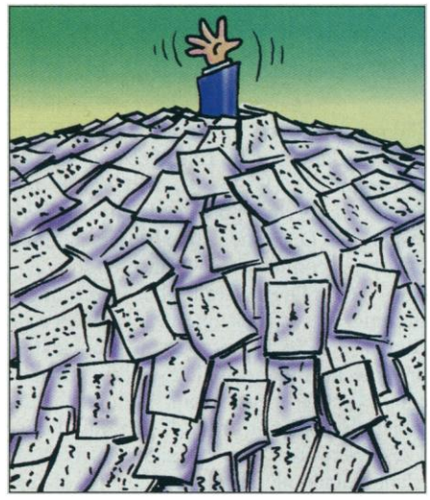
Since the early 1980s, Chinese scientists have made tremendous scientific advances in areas from paleobiology to material science. However, this is not an easy time for science in China. It is difficult to attract young people to research. More than 80% of scientists who leave China for academic degrees and postdoctoral training do not return, except for brief (1- to 2-year) visits. Furthermore, the phrase "publish or perish" has taken on new meaning in China, where the system of scientific publication is being strained both by the high volume of papers and an artificial reliance on foreign rating systems.

According to an official report, 4294 scientific journals are being published in China (*1*). Every university, institute, and professional society has at least one and frequently several publications. It is not possible for a system with limited resources to support this many journals. This partly explains the fact that Chinese scientific journals are lagging behind those of the rest of the world (*2, 3*), especially as measured by the most commonly used rating system produced by the Institute for Scientific Information (ISI) in Philadelphia. This organization continuously records scientific citations and has developed from them a number called the journal impact factor (IF) (*4*). The IF is of critical importance to Chinese scientists. Grant renewal and promotion usually depend on publication in a journal with an impact factor of 2 or more, and publication in a journal like *Science* or *Nature* earns the authors an award from the National Natural Science Foundation of China (NSFC) or the author's institution of 200,000 yuan. The number of Chinese scientific journals covered by ISI has been decreasing in the past 15 years, and the highest IF of any journal in China is currently 0.5. Although there are domestic rating systems, they only analyze Chinese journals but not papers published in international journals.

The IF is affected by factors unrelated to the scientific quality of the articles (*5*). Lack of sufficient information in English (such as title, abstract, and key words) handicaps journals during the ISI selection process (*6, 7*). Thus, an excellent paper published in a high-quality journal in China may have a lower impact than if it had been published in an inferior journal abroad.

Chinese scientists are acutely aware of the low IFs. Recent statistics based on ISI's Science Citation Index database show that, despite an increase in the number of research papers written by Chinese scientists in mainland China from 3475 in 1983 to 10,033 in 1997, the percent published in Chinese journals decreased from 43.2% to 17% (*8*). We see the low prestige of Chinese journals as a major factor causing this drain of high-quality papers. Chinese policymakers and administrators will need to realize the meaning and limitations of the IF and to use it correctly to encourage scientists to publish in Chinese journals.



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Buried under the weight of their own journals.

Why do we see publication in Chinese journals as critical? Because of the cost of foreign scientific journals, many Chinese scientists do not even see the results of their colleagues' work. Furthermore, a domestic scientific journal can be seen as a window to the outside world, and its performance helps to determine the status of the science being done in that country.

There has been an increasing effort recently to find ways to solve this problem (*9*). Many Chinese scientists and editors have proposed that the number of the journals should be reduced to one-third of the present number, and Chinese scientific journals should, in effect, be subject to "birth control." In a hopeful development, the NSFC and the China Association for Science and Technology (CAST) have decided to provide financial support of 6 million yuan per year to approximately 100 Chinese scientific journals that have high academic standards. This should help to improve these journals and to increase their international influence.

Finally, more attention should be paid to advertising and distributing Chinese scientific journals outside of China. At present, subscriptions to English-edition Chinese scientific journals are very low, a situation that is attributable, at least in part, to the lack of efficient distribution channels. Several Chinese journals, including *Progress in Natural Science*, *Science in China*, and *Chinese Science Bulletin*, are seeking suitable distribution partners abroad.

Recently, a series of articles has appeared that discusses establishment of a global, repository for reports of research in the biomedical sciences (*10*). Many scientists and international scientific organizations have expressed their intention to be part of this online publishing venture. We think that Chinese biomedical journals should take the opportunity to make the papers they publish enter PubMed Central. This would efficiently enlarge the visibility of Chinese scientific reports and journals in the international scientific community.

We believe that with close attention and energetic support from the scientific and technical establishment in China, the academic level and international influence of our scientific journals will be greatly improved in the near future. This can only benefit the progress of science in our country.

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References and Notes

1. B. H. Zhang, *Complete Collection of Chinese Scientific Journals* [in Chinese] (Gansu Publication House, Lanzhou, China, 1999).
2. C. X. Shi, Z. Z. Tian, X. Y. Huang, H. Q. Qian, *Chinese Sci. Bull.* **42**, 888 (1997).
3. C. L. Zou, "How Chinese scientific journals can become internationalized" [in Chinese], *Chinese Science Times* 18 May 1998, p. 3.
4. The IF is the number of citations to articles published in a journal in a 2-year period divided by the number of articles published in that journal. ISI Journal Citation Report 1998.
5. P. O. Seglen, *Br. Med. J.* **314**, 498 (1997).
6. J. Testa, "The ISI database: The journal selection process." Available at www.isinet.com
7. In 1997, ISI selected 3449 scientific journals. Of these, 40.4% were from the United States, 21.3% were from the United Kingdom, 9.8% were from Holland, 7.7% were from Germany, and 3.3% were from Switzerland. Only 604 journals (17.5%) were selected from the rest of the world.
8. S. L. Ren, B. Q. Wang, Z. M. Guo, N. G. Ding, *Acta Editol.* **10**, 152 (1998).
9. The NSFC sponsored an international symposium called "Improving the Level of Chinese Scientific Journals" in Beijing on 28 April 1999.
10. E. Strauss, *Science* **285**, 1466 (1999); D. Butler, *Nature* **398**, 735 (1999); www.nih.gov/welcome/director/pubmedcentral/pubmedcentral.htm).
11. C. Macilwain, *Nature* **399**, 8 (1999); D. Butler, *Nature* **399**, 292 (1999); D. Butler, *Nature* **400**, 97 (1999); A. Saegusa, *Nature* **400**, 491 (1999).

References and Notes

[10] **Introducing Proteins Into the Body's Cells**
Evelyn Strauss
Science, New Series, Vol. 285, No. 5433. (Sep. 3, 1999), pp. 1466-1467.
Stable URL:
http://links.jstor.org/sici?sici=0036-8075%2819990903%293%3A285%3A5433%3C1466%3AIPITBC%3E2.0.CO%3B2-W