



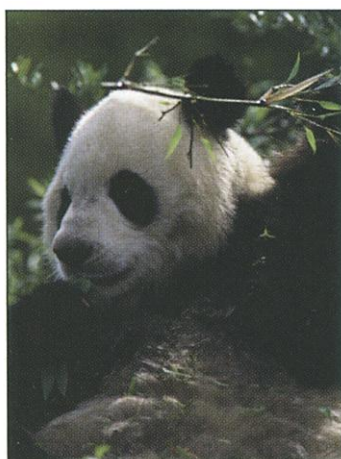
## The Pandas' Habitat at Wolong Nature Reserve

**USING ANALYSIS OF REMOTE SENSING DATA** from China's Wolong Nature Reserve, Jian-guo Liu and colleagues demonstrated serious panda habitat degradation inside the reserve since its creation in 1975 (1). On the basis of this finding, the authors question the ability of protected areas in China and worldwide to protect habitat. We agree that the compilation of these data is valuable and that such data should be made available for other protected areas. However, we contend that the specific case of Wolong sheds more light on the effectiveness of management strategies than on the effectiveness of protected areas in general.

Although Wolong does not stand alone as an example of a protected area suffering degradation, research from a large number of protected areas indicates more success than failure in protecting habitat, despite serious environmental threats (2). Furthermore, Wolong itself has largely not been managed for habitat conservation. As Liu and colleagues describe, management of the reserve has in some respects been less rigorous than in surrounding areas. China's one-child policy does not apply to most of the reserve's residents, resource use is virtually unrestricted, and tourism has been heavily promoted with little regard to its environmental impact or to generation of local benefits. People in the reserve do not benefit from the energy alternatives available in surrounding areas and therefore continue to rely on timber for fuel. Finally, most of the "exceptional financial and technical support" provided to Wolong has been invested in captive breeding programs and a research station to support these programs, rather than on habitat protection (3). In effect, then, Wolong Nature Reserve has been managed primarily for economic de-

velopment and captive breeding (4). It is no surprise that it has not achieved conservation of wild habitat.

In countries around the world, strong basic management has enabled protected areas to preserve biological resources. Refocusing funding in Wolong toward management specifically aimed at protecting habitat and



Local resident of China's Wolong Nature Reserve

wild populations would likely be similarly successful, even in the context of the serious challenges that reserve managers face. Already, since the Chinese government implemented a logging ban in 1998, satellite data show that native vegetation is recovering in parts of Wolong.

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**ALTHOUGH THE FINDINGS OF LIU AND HIS** colleagues direct attention to a serious problem—ecological degradation in protected areas—the authors imply that Wolong is not better off for having become a reserve. However, between 1974 and 1989 the habitat occupied by giant pandas shrank by 50% in Sichuan Province, mostly as a result of commercial logging (1). Had the Wolong

Nature Reserve not been established in 1975, it is highly likely that far more forest, and thus pandas, would have been lost.

Furthermore, although Wolong is not alone among China's more than 30 giant panda reserves in the human pressures that it faces, it is far from representative. Most panda reserves see few if any tourists, lie in remote areas, and have no human communities living within their boundaries. Nor is Wolong the only panda reserve that receives high levels of financial and technical support. Thus, it seems inappropriate to speculate on the effectiveness of habitat protection in other panda reserves on the basis of the analysis from Wolong.

Finally, the findings of Liu *et al.* are indeed sobering; however, they should be put in perspective. Since 1993 the Chinese government has more than doubled the number of giant panda reserves, bringing half of giant panda habitat under protection. A moratorium on commercial logging since 1998 has placed the pandas' entire range off limits to timber harvest and presents an unprecedented opportunity to protect, and even restore, panda habitat outside the reserve network. Wolong's situation exposes the hurdles that remain, but a look at the bigger picture gives hope that we might be turning a corner.

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## Response

**REGARDING THE COMMENTS FROM BROOKS** and co-authors, Wolong has made a number of efforts to reduce human impacts on the forests and panda habitat (1), with variable success. For example, in the 1980s the Chinese government and the World Food Program built a large apartment complex inside Wolong. The hope was that local residents of 100 households in the pandas' core areas would move to the apartment complex, but no one moved. Other efforts included the requirement of permits for noncommercial timber harvest

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and the establishment of a patrol team to monitor poaching and illegal timber harvesting. Furthermore, management suitable for other areas is not necessarily feasible for Wolong. For instance, because state policy allows the minority groups (about 80% of local residents in Wolong) to have more children, it is beyond Wolong's power to implement the "one-child" policy. Additionally, the 1998 logging ban was implemented in Wolong only a few months ago. At present the local residents still have fuel wood collected in previous years. Once the leftover fuel wood is burned, it could be a dilemma if no other affordable energy is available.

Regarding the comments from Baragona, she begins with a discussion of panda habitat loss in Sichuan province; however, there is no basis for comparison between the rates of forest loss in Sichuan Province and Wolong, because the two areas have different socioeconomic, geographic, and ecological conditions. Commercial logging does have serious impacts on forests and panda habitats, but it is not the only factor affecting them. After commercial logging in Wolong stopped in 1975, other activities (e.g., fuel wood collection) emerged as the main factors affecting forests and panda

habitats. Had Wolong not been established as a reserve, it is hard to imagine that it would have attracted so many tourists. Thus, Baragona has perhaps overestimated the impacts of commercial logging, underestimated the impacts of other human activities, and overlooked the interactions among different factors.

When Wolong was established as a reserve, it was similar to many newly created panda reserves—remotely situated and saw few, if any, tourists (1). An increasing number of reserves are now building roads and other facilities for tourism. It is likely that in a few decades many other reserves will face similar situations as Wolong does today—conveniently connected with well developed transportation systems and visited by tens of thousands of tourists a year.

Baragona says that we implied that "Wolong is not better off for having become a reserve," but she seems to have misinterpreted our results. What we found was that the rates of high-quality habitat loss in Wolong increased after the reserve was created. These findings suggest that the combined impacts of other activities have exceeded the impacts of commercial logging, and that stopping commercial logging alone does not guarantee the protec-

tion of panda habitat. One must question, therefore, why the rates of high-quality habitat loss in Wolong have increased. The answer lies in understanding the complex interactions among multiple human activities, which requires comprehensive analyses integrating ecology, human demography, behavior, and socioeconomics (2, 3).

We commend the establishment of more panda reserves and the attempt to ban logging as well as other good work performed by the Chinese government, Wolong, and organizations such as the World Wildlife Fund. To better protect panda habitats, more effective measures need to be studied and initiated to help local residents and to reduce human pressures inside and around reserves.

Finally, we did not speculate on the effectiveness of other reserves. Instead, we suggested adopting more objective approaches using remote sensing data and field observations to assess other protected areas around the world.

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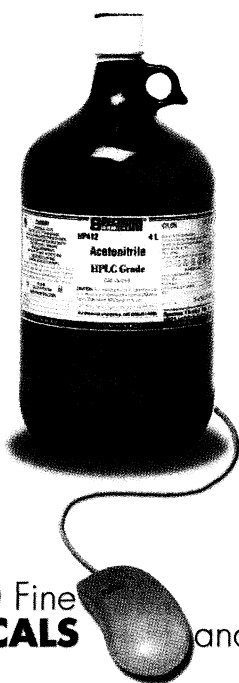
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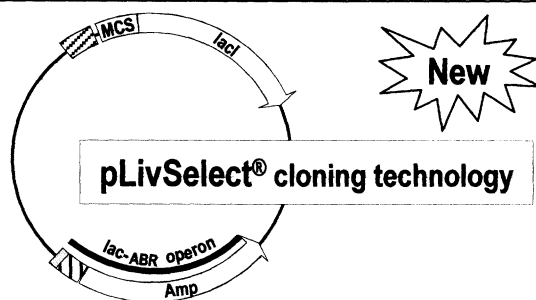
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## Social vs. Natural Science?

I LARGELY AGREE WITH CLIFFORD GEERTZ (*Science's Compass*, Books *et al.*, 6 Jul., p. 53) and the main point of the work he discusses, *Making Social Science Matter* (1)—that social research can make good use of a “phronetic” approach, that is, qualitative and judgmental, as distinct from mere imitation of the “hard” sciences. This argument has been a major theme of European philosophy for the better part of the last century, its most powerful modern exponent being H. G. Gadamer (2). I have, however, one objection: the pervasive use of the phrase “view from

nowhere” in characterizing natural science. To advance or correct the social sciences, we need not diminish or distort, even subtly, the approach of the natural sciences, and that is what this catchy phrase often does. But when Thomas Nagel introduced it in his thoughtful book of that title, he was speaking mainly about objectivity and subjectivity in philosophy, and the phrase was intended as purely descriptive (3).

Yet it seems to me that, in science, even as description the phrase is surely misleading. If catchy phrases we must have, then I suggest an alternative: let it be the “view from everywhere,” reflecting more nearly what the natural sciences do. There is a big difference between “no reference frame” and “invariance” under specified transformations of reference frames or standpoints. I am pointing here not only to the well-known invariances of physics under coordinate transformations but, far more generally, to “transformations” or interchanges of investigators, cultures, and experimental equipment, and to the practice of acquiring many “profiles” of the same phenomenon. David Bohm, among others, has expounded this idea, including the role of dialectics or hermeneutics in it (4). And I have tried to

apply it in some detail to the history of solar neutrino research (5).

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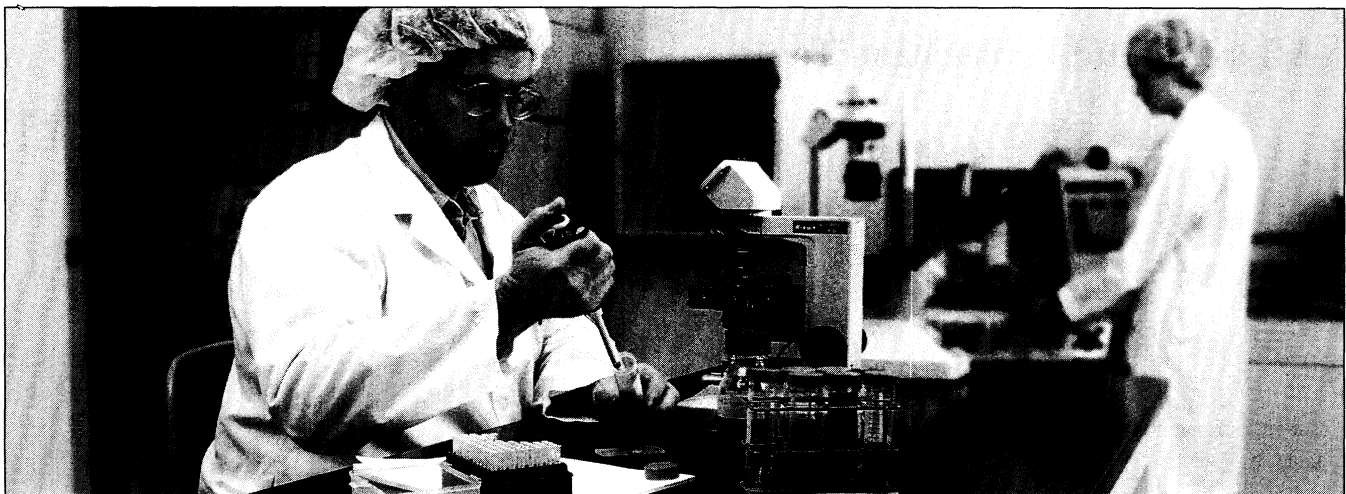
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## UNSCEAR on the Health Effects from Chornobyl

IN THE NEWS FOCUS ARTICLE “LIVING IN THE shadow of Chornobyl” (20 Apr., p. 420), in which Richard Stone examines the effects on human health of the nuclear accident at Chornobyl 15 years ago, the latest report from the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) (1) is not mentioned.

The report, published last year, assessed the radiological situation in the highly contaminated regions of Belarus, Russia, and



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