ment, and institutions leads to the corrupting of our foreign policy endeavors, what *is* to be expected from an American contribution toward globalization, environmental conservation and management, and the reduction in nuclear materials that is ostensibly supposed to satisfy a widely desired, but rarely honored, belief in how science, technology, and foreign affairs, in tandem, can lead to the betterment of our planet?

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Economics and Informed Passions

In the letter "Environmental economics and ecological economics" (18 July, p. 300), Trudy Ann Cameron argues that economists " 'fiercely resist' . . . the temptation to make value judgments regarding the choices that people ought to make" and that "[s]ome aspects of ecological economics do not fit this mold." Economists, by the very nature of their training and the assumptions behind their dominant model, value individual choice over collective choice. This and other shared values among economists affect the "objectivity" of their work, but, because they are shared, they may not be recognized. We ecological economists are a diverse group of economists, ecologists, and systems thinkers who are very aware of the values associated with the multiple models we use. Environmental economists' "dispassionate" "focus on matters of fact" have led them to focus on models which assume that current generations hold the rights to resources and environmental services and that the current distribution of such rights between rich and poor is the one we would choose if given the choice. Their models, in short, do not inform us of the consequences of exercising our passions, should we wish to do so.

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Critical Habitats on Private Land

The Policy Forum by Fraser Shilling (13 June, p. 1662) criticizes the U.S. habitat conservation plan process, but also provides potential solutions. Shilling suggests that the endangered species listing process be speeded up and critical habitat be defined at the time of listing. He also suggests that the goal of a listing a species as threatened or endangered be recovery at a level higher than the minimum viable population. These suggestions assume that adequate and scientifically defensible data are available on wild populations and habitats. This is, in fact, rarely the case. Few species, even those that are fairly common game, have been studied enough to produce with good scientific data on population dynamics, habitat use, and so forth. The real solution is to have adequate available funds to conduct basic research on any and all species, no matter what the status of the species. Section 6 endangered species grants are rarely adequate to fund sound scientific research and are generally available from the U.S. Fish and Wildlife Service only "in the eleventh hour," contingent on congressional approval. The Teaming with Wildlife initiative is an example of a workable funding mechanism that—like the Pittman-Robert-

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Shilling omits an important reason for considering the costs to property owners in the design of Endangered Species Act habitat protection programs. The issue is far more than just angry landowners. Property owners are fighting against the often severe limitations on the use of their property under the act by suing federal, state, and local governments, to pay compensation for their loss of the use of their property (*1*), as is provided for in the Fifth Amendment of the U.S. Constitution ("nor shall private property be taken for public use without just compensation"). Sometimes, as in *Lucas* v. *South Carolina Coastal Council* (*2*), decided on 29 June 1992 by the U.S. Supreme Court, the property owner wins.

The "takings" clause of the Fifth Amendment was supposed to ensure that the costs of government projects that inure to the benefit of the general public would be paid for by the general public and not be foisted on a small minority of citizens. The seizure of the use rights of somebody else's private property to form part of a public habitat protection program (although the property owner still retains the right to look at the property, to have picnics on it, and to pay the property taxes) is, in more and more cases, resulting in "takings" lawsuits. Thus, the matter of designing habitat protection in ways that take into account the costs to property owners is a serious constitutional issue.

Some property owners view habitat conservation plans as an illegitimate abuse of government power. Legitimacy is not a small matter in a political process that has become little more than a war of all against all to get control of other people's money or property for the winners' favorite government programs. Perhaps, in this chaotic struggle, many have forgotten the stabilizing and civilizing effect of legitimacy on a society. Legitimacy is what distinguishes law from mere force.

It is perhaps easier for me to see all sides of this issue because I am a scientist, a property owner (more than 1000 acres in central Nevada, including one piece with two endangered species on it), and a student of constitutional law.

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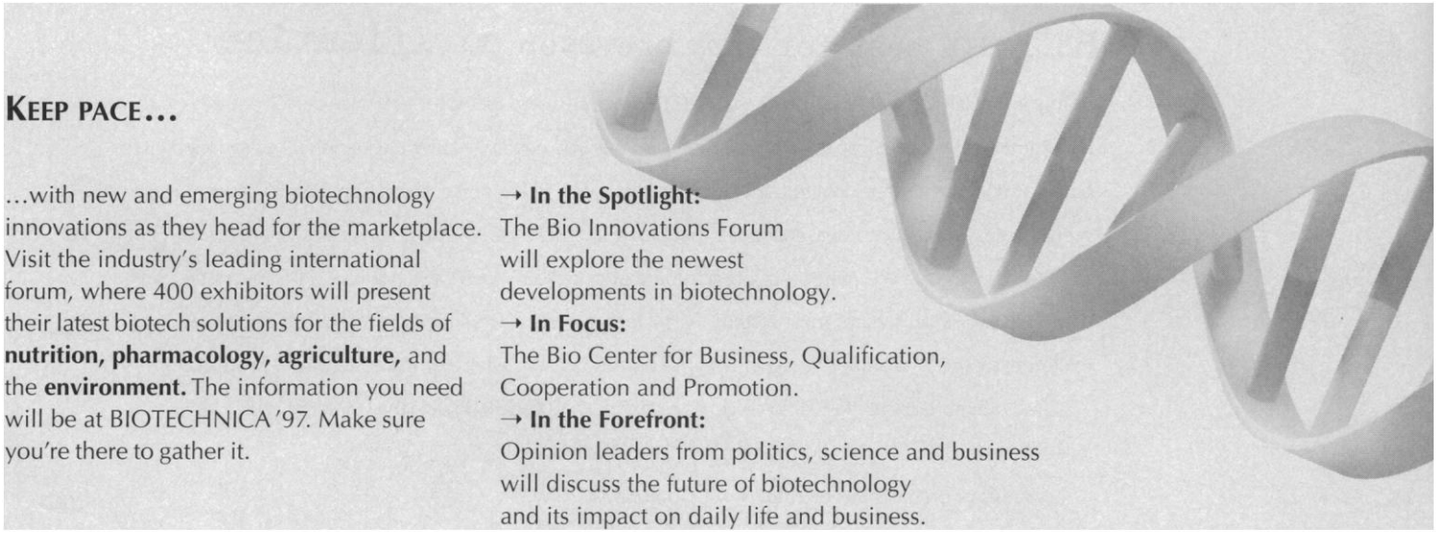
1. R. A. Epstein, *Takings: Private Property and the Power of Eminent Domain* (Harvard Univ. Press, Cambridge, MA, 1985).
2. *Lucas* v. *South Carolina Council*, *Supreme Court Rep.* **112**, 2886 (1992).

Response: Applegate refers to a critical aspect of endangered species protection—that of funding. Through funding constraints, Congress and the Administration limit the availability of scientific information regarding listed and candidate species, the rate of new species listing, and the designation of critical habitat and recovery efforts. Politicians from both major parties have used funding constraints to rein in the Endangered Species Act so that short-term private economic gains are not jeopardized. But ignoring the value of intact natural systems (*1*) is likely to have negative consequences for ensuing generations. Every year, close to $1 billion is pillaged by Congress from the Land and Water Conservation Fund (derived from a tax on offshore oil drilling) and diverted to deficit reduction, rather than land acquisition, as was originally intended. An expansion of this fund and dispersal of it for actual conservation measures could do wonders for endangered species protection and recovery.

Shaw refers to private property rights as if this was the overriding concern expressed in the U.S. Constitution. The interpretation of the "takings" clause of the Fifth Amendment has been carried to an extreme primarily by corporate interests who see any restriction on their economic activity as an anathema. The majority in the case cited by Shaw sided with Lucas (the property owner) because they recognized that Lucas had lost all economic value in his property (*2*). Partial loss of value resulting from regulation is accepted legally as an inevitable result of regulation. "Government could hardly go on if to some extent values incident to property could not be diminished without paying for every such change in the general law" (*2*). For example, the Clean Air and Clean Water acts are "public resource" laws that restrict private economic activity for the long-term well-being of the general public. Thus, the "takings" argument, when applied to environmental regulation, must be balanced with consideration



of the benefits incurred by all, even those who claim to be the victims of the taking.

I agree with Shaw that the costs of environmental protection are best shared equitably among the public. One way to do this would be to provide incentives to property owners to not destroy their land. This could be done by (i) charging those among us who degrade natural systems with the use of a fee based on measurable indices of the value of the systems (*1*), or (ii) taxing everyone according to income and purchasing outright land that is in need of protection. In both cases, the costs would be passed along, through normal economic activity, to the public. To create a sustainable economy, we must limit human activities that damage our own natural support system.

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1. R. Costanza *et al.*, *Nature* **387**, 253 (1997).
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A U3-Like Small Nucleolar RNA in Archaea: Retraction

In a report from this laboratory (19 May 1995, p. 1056) (*1*), a complementary DNA (cDNA) clone of an RNA with U3-like properties from the hyperthermophilic archaeon *Sulfolobus acidocaldarius* was described. In subsequent experiments, we were unable to identify the encoding sequence of the RNA within the genome of this organism. The cDNA appears to have originated from the *Taq* DNA polymerase used in the cDNA polymerase chain reaction. With appropriate primers, the internal portion of the sequence can be amplified with the use of *Taq* DNA polymerase without added template DNA; amplification with Vent DNA polymerase requires added template. The encoding sequence was not found in the genome of *Thermus aquaticus*, and its organismal origin remains unknown.

It was initially observed that the ability of the processing fraction to cleave the 5′ external transcribed spacer of ribosomal precursor RNA (pre rRNA) was reproducibly sensitive to micrococcal nuclease. This was interpreted in the report (*1*) to mean that the processing fraction contained an essential RNA component. With further purification and using the same assay, we now observe that the more pure fraction is not sensitive to micrococcal nuclease digestion, whereas the less pure fraction is sensitive. At present, we do not understand the full significance of this observation, but it suggests that an RNA may not be required for these endonucleolytic cleavages. Finally, the use of an in vitro assay to study both precursor and 5′-end maturation cleavages in a pre-16*S* rRNA substrate was reported (*1*). Recent work has shown that, under the conditions used (*1*), precursor cleavages occur efficiently, whereas only a small amount of 5′-end maturation cleavage occurs. We therefore retract and correct these aspects of the report (*1*).

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1. S. Potter, P. Durovic, P. P. Dennis, *Science* **268**, 1056 (1995).

Corrections and Clarifications

Marcia Barinaga's 27 June Research News article, "New imaging methods provide a better view into the brain" (p. 1974) erroneously attributed the imaging of ocular dominance columns exclusively to Kamil Ugurbil's neuroimaging team at the University of Minnesota, Minneapolis. That research project was conducted by Ravi Menon at the John P. Robarts Research Institute in London, Ontario, Canada, in collaboration with Ugurbil at the University of Minnesota.

Letters to the Editor

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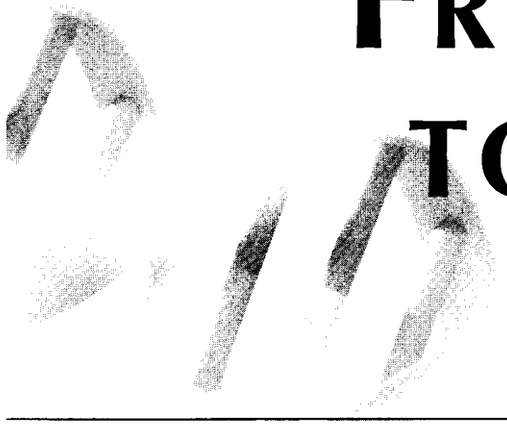

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