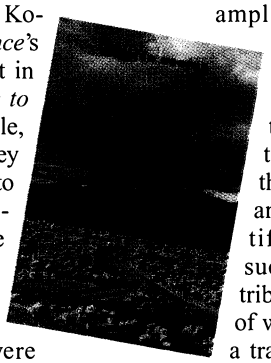
**The author of *The River* responds to a letter from researchers whose work was discussed in his book. *Science* reported comments from several presidential candidates concerning the decision to eliminate evolution from Kansas' science curriculum requirements, but not comments from Bill Bradley: a reader passes those along. Another perspective on the book *From Space to Earth* is offered from a scientist who was at the heart of efforts to develop solar cells for the commercial market: "[John] Perlin's book tells the story of people who took an existing space technology and used it to improve the quality of life on Earth." Some clinical observations are offered by Oliver Sacks of the ability of patients with different mental impairments to conceive of other people's mental states. And aspects to be considered in proposals for worldwide ecosystem assessment are discussed.**

## Of Chimps and Men

Stanley A. Plotkin and Hilary Koprowski say in their letter (*Science*'s Compass, 24 Dec., p. 2450) that in my book, *The River: A Journey to the Source of HIV and AIDS* (Little, Brown, 1999), I suggest that they "covertly used chimpanzee cells to produce the live oral polio vaccine (OPV) that was used in the first mass campaign with OPV in the former Belgian Congo."



Although I do suggest in the book that chimpanzee cells were used to prepare certain batches of the OPV (CHAT) that was fed to more than a million Africans in the present-day Democratic Republic of Congo, Rwanda, and Burundi between 1957 and 1960, at no point do I specify which researcher, or which laboratory, prepared batches of CHAT in such cells.

What I do make clear is that a minor proportion (about one-fourth) of those 1 million OPV doses was produced at the Wistar Institute in Philadelphia, Pennsylvania, and the remaining doses were produced in Belgium, at the Rega Institute in Leuven and at the RIT laboratory in Rixensart. I also point out that, although there is at present no published information about the primate substrate that was used to produce CHAT at those three institutions, there is documentary and anecdotal evidence that kidneys from Congolese chimps, destined for tissue culture purposes, were present in Philadelphia and Belgium during this period.

Furthermore, at least 250,000 doses of CHAT vaccine were redistributed into smaller containers at the medical laboratory of Stanleyville (now Kisangani, Congo), where chimpanzee kidneys were being handled. Contamination could therefore also have occurred there, either by chance or because chimpanzee kidney tissue cultures were used to boost the titre, or amplify the available stocks, of CHAT vaccine (*1*).

Plotkin and Koprowski mention in their letter that they are collecting data about the cells they used to make their OPVs, and that these data are to be published in a scientific journal. The release of such information should contribute to resolving the question of whether the AIDS pandemic is a tragic example of an iatrogenic disease—a disease caused by medical intervention.

**Edward Hooper**

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1. E. Hooper, *The River: A Journey to the Source of HIV and AIDS* (Little, Brown, New York, 1999), pp. 718–722, 788–792.

## A Quote from the Other Bill

With regard to the presidential candidates' positions on the Kansas State Board of Education's decision to remove evolution from the topics included in statewide testing ("Breakdown of the year: Creationists win in Kansas," 17 Dec., p. 2242), Constance Holden did not report the reaction of Bill Bradley—who is at least as credible a candidate at this time as Gary Bauer. I called Bradley's campaign headquarters as part of my research for an article I was writing (*1*). They passed on to me Senator Bradley's response: "While I respect local school board control, I also believe that every American child needs a foundation of solid scientific education, and evolution clearly falls into that category." This is markedly different from the support for creationism expressed by Steve Forbes and Gary Bauer; the general agreement of Elizabeth Dole, John McCain, and George W. Bush that it is OK for local schools to teach creationism; and the Al Gore "waffle" reported by Holden.

**Robert M. West**

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**References**

1. *Informal Learn. Rev. No. 38* (Informal Learning Experiences, Washington, DC, September-October 1999). Also available at www.informallearning.com

## The Down-to-Earth Story of Photovoltaics

In his review of *From Space to Earth: The Story of Solar Electricity* by John Perlin (Aatec, 1999) (*Science*'s Compass, 17 Dec., p. 2280), David Faiman seems to focus much of his attention on what are, at worst, minor faults in the book, and in doing so misses the main message. Perlin's book tells the story of people who took an existing space technology and used it to improve the quality of life on Earth. The book is about people, not science. Faiman may find it "tedious" to hear Perlin's accurate descriptions of how difficult it is to bring a product to the "market," but that is the way of the world outside of the laboratory. *From Space to Earth* tells it as I remember it, and deserves to be read for its demonstration that sometimes we are able to work very hard to help improve the lot of our fellow man.

I agree with Faiman that the subtitle of the book, *The Story of Solar Electricity*, is not well chosen. *From Space to Earth* is clearly only about photovoltaics and specifically about the success in making solar cells useful on Earth. Many of us were taught that the easiest way to use solar energy was to use it as it falls, where it falls, thus taking advantage of the fact that the energy is delivered at no charge to the user. This book demonstrates the value of that principle. There are many other promising solar energy technologies, and I am hopeful that several of them will have future success. We need all the alternative energy sources we can develop.

Perlin enthusiastically focuses on one technology that has succeeded and should be congratulated for the glory he brings to scientists, engineers, and, yes, marketers of photovoltaics. I also appreciate the fact that the book is written at a layperson's level. My mother, my aunt, and my wife, none of whom had any science education beyond junior high, all "loved" the story and found it a "good read."

**Elliot Berman**

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***Response***

Berman's letter represents a difference of opinion that is no less valid than my own. But, perhaps, that difference is more in the shading than in the lines. Given that we both agree that the book's subtitle is a misnomer, I may, perhaps, be forgiven for not having noticed that the book, sent to me for review by *Science*, is supposed to be more about people than science.

The only point in Berman's letter with which I cannot agree, is that solar energy can be delivered at no charge to the user. Were this so, there would be no need for Perlin to have emphasized the role of so many "marketers" for whom, incidentally, I have more appreciation than Berman gives me credit.

**David Faiman**
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## Social "Mentalizing" Abilities in Mental Patients

In their review article "Interacting minds—A biological basis," Chris Frith and Uta Frith postulate that so-called "mind-blindness," an inability to conceive others' mental states (or "mentalize"), is a central feature of both autism and schizophrenia and, as such, is associated with demonstrably impaired function in the medial prefrontal cortex and posterior superior temporal sulcus (*Science*'s Compass, 26 Nov., p. 1692). But one also sees the opposite of this in clinical practice, individuals with social and mentalizing abilities that are strikingly spared—or heightened—especially in contrast to a gross impairment of other capacities. This is not uncommon, for example, in some demented patients, who may preserve all of their previous social insight and sensitivity until very late in their illnesses; and in individuals with Williams syndrome, who tend to show extraordinary social precocity and acuteness despite being severely impaired in other cognitive areas. One wonders whether such individuals, in contrast to the individuals discussed by the Friths, show preserved or heightened activity in the medial prefrontal cortex and superior temporal sulcus?

**Oliver Sacks**
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***Response***

In our article we tried to be more cautious than Sacks suggests. Although we believe that a problem with mentalizing is a feature of autism and schizophrenia, we are not yet convinced that this is the central feature, and we await further evidence about the impaired brain function that underlies the problem. Sacks makes the interesting point that patients can be found in whom mentalizing is preserved when other abilities have been lost. This is further evidence for the idea that mentalizing depends on a relatively circumscribed brain system that can remain intact when other parts of the brain are damaged. Additional evidence for the independence of mentalizing from other abilities comes from a study by Francesca Happé (*1*) showing that mentalizing ability continues to increase in old age at a time when other abilities tend to decline.

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**Uta Frith**
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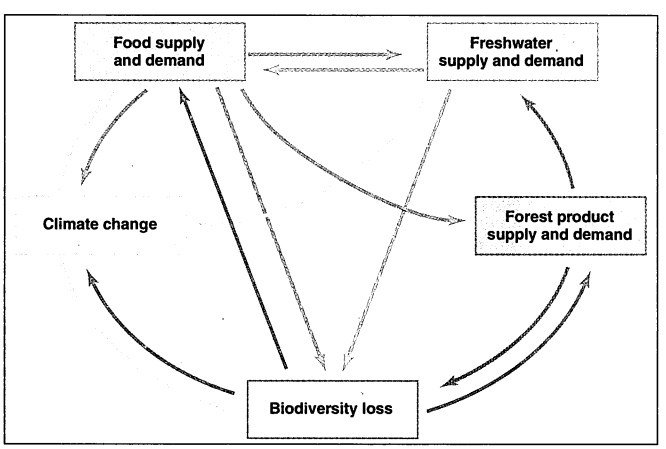
**References**

1. F. Happé *et al.*, *Dev. Psychol.* **34**, 358 (1998).

## Biosphere Management: Some Tools of the Trade

In their Policy Forum "International ecosystem assessment" (*Science*'s Compass, 22 Oct., p. 685), Edward Ayensu *et al.* point out that future human welfare requires an integrated, predictive, and adaptive approach to ecosystem management, and they identify the types of information needed to support such an approach.

In response to these imperatives, Ayensu *et al.* call for a worldwide ecosystem assessment that might cost $5 million to $20 million, occupy 3 to 4 years, and be repeated at 5- or 10-year intervals. This assessment would build on other international activities and would ultimately be complemented by detailed local monitoring and assessment.




**The linkages between various ecosystem goods and services must be taken into account in ecosystem assessment and management.**

CREDIT: MODIFIED FROM R. T. WATSON *ET AL.*, *PROTECTING OUR PLANET—SECURING OUR FUTURE* (U.N. ENVIRONMENT PROGAMME, NASA, AND WORLD BANK, WASHINGTON, DC, 1998)

The authors identify two requirements: a new approach to ecosystem management, and development of an information base to support that approach. However, their proposed international assessment may not be the best long-term enterprise for meeting those needs. A more appropriate enterprise might be one that is ongoing and draws upon contributions from many more institutions and individuals.

The major obstacle to sustainable management of the biosphere is a lack of broad-based public understanding and political will. To build the necessary public understanding, biosphere management tools such as ecosystem assessment should invite the participation of numerous stakeholders. This would complicate the provision of peer review and quality control, but those functions would also be difficult to perform in the assessment proposed by Ayensu *et al.* Techniques such as the tagging of data with information about its originator could perhaps be helpful in this respect. Also helpful could be a worldwide consensus on a comprehensive conceptual architecture for ecosystem information.

Over time, ecosystem assessment at global and local scales could become a function that is routinely performed by a host of institutions as one of their normal functions. This arrangement could harness vast human and institutional resources to the assessment task, while building public understanding and political will. The assessment proposed by Ayensu *et al.* could, if properly designed, lay the groundwork for that arrangement.

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***Response***

We agree with Thompson's suggestion that ecosystem assessments should be ongoing and must invite the participation of numerous stakeholders. We believe, however, that an international process repeated at 5- to 10-year intervals, which would include catalytic local, national, and regional ecosystem assessments as we suggested, could be the most effective way to stimulate ongoing assessments at multiple scales. An international assessment can demonstrate the utility of the integrated approach, develop and test methodologies that could be used at multiple scales, and build the capacity to undertake such ongoing assessments at local and national scales. Stakeholder participation does complicate the provision of quality control, but as Thompson notes, this