III trial is justified.

Jean-Paul Lévy
Agence Nationale de Recherche sur le SIDA (AIDS), 101 rue de Tolbiac, 75654 Paris Cedex 13, France, and Institut Cochin de Génétique Moléculaire, 22 rue Méchain, 75014 Paris, France
E-mail: icgm-levy@cochin.inserm.fr

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Ecological Science and Statistical Paradigms

In his excellent research commentary "Ecological science and statistical paradigms: At the threshold" (*Science*'s Compass, 23 Jan., p. 502), Brian A. Maurer calls for more testable models in analyzing ecosystem behavior, given the complexity and causal uncertainty associated with such ecosystems. Others, including me, would take his recommendation one step further. One major social science approach to analyzing highly complex and uncertain behavior is triangulation, the use of very different (indeed, orthogonal) theories, methods, or databases to converge on points for follow-up (*1*). By using such different but formal approaches to address an issue, we do not so much reduce the issue's uncertainty or complexity (although that is one aim) as we increase our confidence about how to proceed. Triangulation has recently been applied to the debate over sustainable development and ecosystem management (*2*) initiated by Ludwig, Hilborn, and Walters' 1993 *Science* Policy Forum (*3*).

Emery Roe
Center for Sustainable Resource Development, University of California, Berkeley, CA 94720, USA
Email: emrnpa@nature.berkeley.edu

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On "The Science of Substance Abuse"

The series of papers entitled "Frontiers in neuroscience: The science of substance abuse" (3 Oct. 1997, p. 45) provides a thoughtful review of recent research on how addictive drugs alter brain function. Several of the papers present the conventional view that addiction is a chronic and relapsing disorder; however, according to epidemiological research, addiction is the psychiatric disorder with the highest recovery rates and the shortest duration (*1*, *2*). Experimental and clinical studies show that the factors that influence voluntary behavior, such as economic and social costs, persuade many addicts to quit using drugs (*3*, *4*). Not mentioned is the fact that voluntary behavior is mediated by the brain and the extensive findings on relapse rates and recovery.

It has long been acknowledged that changes in brain function alter voluntary behavior, and in the last 20 years or so, laboratory research has revealed many of the details of these relations. Thus, neuroadaptation could just as likely influence preference as preclude it. The difference is important. An addict who takes drugs voluntarily can be persuaded by contingencies or new information to stop using them. An addict who takes drugs involuntarily cannot be persuaded by costs and incentives to stop using them. To determine whether drug-induced brain changes lead to involuntary drug use, we must turn to the re-

search on relapse rates and recovery.

Relapse rates in many clinical outcome studies are high (5). However, only about 30% of addicts go to clinics for treatment (6). This population is unusual in that more than 60% suffered from one or more additional psychiatric disorders, and among cocaine addicts, the comorbidity rate was 76%. In contrast, for addicts who did not seek treatment, 70% of the population, the psychiatric comorbidity rate was 29%, a figure that is not much higher than the expected value for those not addicted (6). In other words, the clinical relapse rates for addicts may say more about the plight of individuals with multiple disorders than about the nature of addiction.

Treatment for addicts can work, and outcome studies indicate that programs are most effective when they are consistent with the ideas that (i) drug use in addicts can be altered by the proper arrangement of costs and benefits, (ii) addictive drugs reduce options but do not eliminate choice, and (iii) the biology of addiction is the biology of voluntary behavior (7).

Gene M. Heyman
Department of Psychology,
Harvard University,
Cambridge, MA 02138, USA
E-mail: gmh@wjh.harvard.edu

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8. Supported by a grant from the Russell Sage Foundation.

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The Korean DMZ: A Fragile Ecosystem

The Demilitarized Zone (DMZ) and the Civilian Control Zone (CCZ) along the South–North Korea divide are widely known biologically diverse reserves (Ka Chung Kim, Policy Forum, 10 Oct. 1997, p. 242).

The CCZ has been under persistent threat of development by landowners, who wield enough power to pressure congressmen to legalize development in the CCZ. A special CCZ development program was nearly created by these forces, but Korea's current financial crisis has slowed down its progress.

The Korean Peace Bioreserves System, discussed by Kim, does not appear to be able to alter the fate of the area's bioreserves. Several years ago, the Ministry of Environment attempted to designate the Chulwon area a National Ecological Park by enforcing the Natural Resource Conservation Act, but he did not succeed because of strong resistance from the landowners. In early 1997, the Korean National Commission for UNESCO completed a study to design a CCZ ecosystem preservation plan, but it also has had little success stopping the development forces. The fundamental problem is the conflict between the private preferences that lead to resource appropriation and the social preferences that value resource preservation.

We need to consider the long-term benefit from preserving the bioreserves and compare this benefit with individuals' immediate goals of pursuing land conversion for personal monetary gain. The government, law-makers, biologists, ecologists, and landowners need to be cognizant of the value of ecosystem resources in the areas. It