only 1 Mg ha^{-1} year^{-1}. Yet, Troeh *et al.*, on the basis of USDA information, state that the soil-loss tolerances for U.S. soils range from 2.2 to 11.0 Mg ha^{-1} year^{-1} (*2*, p. 115). U.S. agriculture is mostly on soils with a soil-loss tolerance of 11 Mg ha^{-1} year^{-1} or more (*3*, p. 678). Hence, there appears to be little disparity between soil-loss tolerance and what Pimentel and Skidmore say is the rate of erosion. Even according to the USDA study cited by Pimentel and Skidmore (*4*), only one-third of U.S. agricultural land is eroding faster than the sustainable rate—a statement that remains to be proven. Although erosion rates may be periodically high in some regions, U.S. soil erosion remains a problem but does not seem to be a crisis.

Pimentel and Skidmore also mention a USDA study for which 800,000 sites were sampled, seeming to imply a high degree of accuracy. However, these are not physical measures of soil erosion, but are data-gathering sites for models. Moreover, according to Uri and Lewis (*5*), who they cite, there were only 300,000 such sites. And the annual "social costs" of $29.7 billion in (*5*) are only asserted; it is not clear what evidence was used to arrive at that figure.

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Meme's the Word

In our Essay on Science and Society "Creative sparks" (Jacob Goldenberg, David Mazursky, Sorin Solomon, *Science*'s Compass, 3 Sept., p. 1495), we proposed that certain implicit regularities (termed templates) guide the emergence of creative ideas. In her letter commenting on our Essay (*Science*'s Compass, 1 Oct., p. 49), Alice Hudder suggests that "Perhaps we can learn something about creative processes by studying evolution."

The ex nihilo axiom (*1*) in creativity—the emergence of something out of nothing—has been a main obstacle in creativity research. Attempts to draw a parallel between creative thinking and evolutionary processes are naturally related to their complexity (*2*). Jacques Monod (*3*), a molecular biologist, noted that ideas exhibit properties of organisms: They perpetuate their structure, breed, fuse, recombine, segregate their content, and evolve. In this evolution, selection must play an important role. R. Dawkins (*4*) termed the unit of idea replication "ideosphere," suggesting that the soup in which memes (tunes, ideas) grow and flourish—the analog to the primordial soup (out of which life first emerged)—is the soup of human culture. Just as genes propagate in the gene pool by leaping from body to body, so memes propagate by leaping from brain to brain. Memes are susceptible to variation or distortion and are forced to compete for brain resources.

We posit that the analogy between evolution and creativity could be more constructive by conceptually pairing genes and templates at a deeper level, and species and ideas at a more discernible level. In the same way that changes in the genes control the behavior of species—indirectly and over long time scales—templates control the properties of ideas. Another distinction is that, for differential survival of entities, each entity must exist in the form of numerous copies, with some entities capable of surviving for extended evolutionary time. However, in the case of advertising ideas, technological innovations, and new product ideas (three do-

mains we explored), the life-span of ideas is too short to allow for an "idea-based evolution" mechanism to be activated, temporally progressed, and eventually exhausted. The worldly consequences (for example, market behavior) feed back to influence the competition among templates rather than ideas. Certain templates are "selected for" to be promoted or to survive, and others are "selected against" to vanish. Finally, genes are invisible in the scale of behavior, and so are templates; only scientific exploration can uncover their existence and their dynamics.

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CORRECTIONS AND CLARIFICATIONS

In the News Focus article "Fighting fire with fire" by David Malakoff ("Biological invaders," 17 Sept., p. 1841), the caption on page 1843 for the top images should have read "Larvae of *Rhinocyllus conicus* (adult, right)."

In the Report "Slope water current over the Laurentian Fan on interannual to millenial time scales" by L. D. Keigwin and R. S. Pickart (15 Oct., p. 520), some symbols and the lines connecting the symbols in panels B and D of Fig. 4 did not print. The correct figure appears here.