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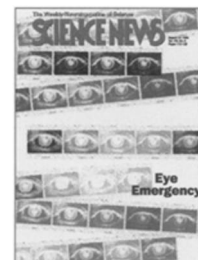
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## Letters

### Overlooked aspects of overpopulation

In "The Human Numbers Crunch" (SN: 6/22/96, p. 396), population and consumption are considered as separate factors, to be traded off against one another. The examples compared First-World and Third-World consumption of resources by single individuals in a given slice of time. But this model does not allow for change over time—or population increase.

Consider the matter in terms of consumption across generations. Who consumes more—a Third-Worlder who consumes 1 unit of resources and has four children who consume and reproduce as their parents did, or a First-Worlder who consumes 10 units of resources and has two children who repeat the parental pattern? Work it out to five generations and you'll see who consumes more.

If you assume that the First-Worlder consumes 1,000 times more than the Third-

Worlder, it still takes only 11 generations to show that the First-World pattern is more economical—and there's the additional factor of a shorter generational cycle in the Third World.

Reproduction, then, is the ultimate form of consumption. Its exponential nature means that no trade-offs in lifestyle or environmental quality can balance for long the demands of unbridled population growth.

*Kenneth Timoner  
New York, N.Y.*

**I find it incredible** that there was virtually no mention of the only acceptable long-term solution to the problem of overpopulation—birth control.

All the effort expended on things like increasing crop yields and reducing soil erosion are doomed to failure unless the root cause of the problem is addressed.

*Fred Jeffers  
San Diego, Calif.*

**Janet Raloff quotes me** as saying at the American Association for the Advancement of Science meeting that the number of people Earth can support . . . depends in part on how many people are willing to wear clothes made from cotton, a renewable resource, versus polyester, a nonrenewable petroleum-based product.

What I actually said was, "How many people the Earth can support depends in part on how many will wear cotton and how many polyester. . . ."

In adding to my cryptic remark the distinction between renewable and nonrenewable sources, Raloff suggests that cotton is more "sustainable" than polyester.

Growing irrigated cotton, a "natural" fiber, requires more agricultural water than producing nylon (derived from adipic acid from oat hulls or corncobs, discarded by-products of other crops). Rayon (from cellulose

*Letters continued on p. 121*

growing into their corneas. Instead, Gottsch speculates, juiced-up immune cells passing the surface of the cornea may somehow react to CO-Ag as they would the villainous hepatitis C.

That case of mistaken identity may explain the immune system's attempt to liquefy the cornea.

Wilson suspects that many people with Mooren's ulcer who test negative for hepatitis C have some other viral connection to the corneal disease. He points out that the newly discovered hepatitis G viruses closely resemble hepatitis C (SN: 4/13/96, p. 238). The G viruses commonly afflict people in West Africa, and so does Mooren's ulcer. He speculates that infection with one of the G viruses may lead to an immune attack on the cornea.

Wilson has sent blood samples from African Mooren's ulcer patients to the Chicago team that characterized the G viruses. If those samples test positive for a hepatitis G virus, researchers will have a whole new set of experiments ahead of them.

**T**o preserve the sight of people afflicted with Mooren's ulcer, researchers are focusing on CO-Ag. Gottsch and Liu have data showing

that CO-Ag is a member of the calcium-binding family of proteins. Such molecules are involved in cell-to-cell communication, Liu says. The researchers speculate that CO-Ag is embedded in the outer membrane of corneal cells.

CO-Ag may play a role in keeping the cornea crystal clear, a prerequisite for good vision, Gottsch adds.

The Hopkins researchers are searching the 46 human chromosomes for the gene that codes for CO-Ag. Once they isolate it, they'll be able to study this elusive protein more effectively in an animal model of Mooren's ulcer, Gottsch adds.

For now, ophthalmologists give Mooren's ulcer patients immunosuppressive drugs to keep the immune system at bay, but those drugs often have serious side effects, such as liver damage. This is especially worrisome because patients with hepatitis C infection already have a damaged liver, Wilson points out.

His own research suggests that treatment with interferon alpha, a naturally produced antiviral substance, is a better bet for people with both disorders. He finds that this drug reduces the amount of virus in the bloodstream while quieting the immune blitz against the cornea.

Wilson suggests a round of interferon

treatment even for Mooren's ulcer patients who do not test positive for hepatitis C. His theory is that at least some of those patients are infected with hepatitis G—or another poorly understood virus—and may therefore benefit from the antiviral therapy.

**R**esearch has already paid off for a few people afflicted with Mooren's ulcer. The first patient Wilson treated with interferon alpha suffered a relapse a year later and was given the antiviral drug again. That was 5 years ago. Her hepatitis C infection remains quiescent, and her eyesight remains clear, Wilson notes.

For Megan, the end of the story has yet to play out. Her parents ruled out immunosuppressive drug therapy as being too harsh. Gottsch has responded by fashioning a cornea replacement from tissue in the girl's leg. Although not as transparent as corneal tissue, it gives Megan limited vision.

Gottsch hopes that the ongoing research will reveal a way to block the immune attack on the corneal protein without harmful side effects. If it does, Megan will have a shot at a new cornea and full-fledged sight, he says. □

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#### Letters continued from p. 115

from wood pulp) may require more or less water, depending on the source of the wood pulp (whether discarded by-product or plantation-grown pulp). Thus, a "natural" fiber may demand more or less irrigation water, and impose greater or smaller economic and environmental costs, than a synthetic fiber.

This change of interpretation shows the dangers of cryptic compression and suggests that there are at least two sides to the choice of fibers, as there are to most choices.

Joel E. Cohen  
New York, N.Y.

#### Good-enough examples of rationality

Gigerenzer's "fast and frugal" natural mental routines to extract decisions from incomplete data by choosing the first good-enough alternative ("Rational Mind Designs," SN: 7/13/96, p. 24) are strongly suggested in two ancient human narrative forms: rhetoric and jokes.

Key rhetorical methods are to mention the items that you want to influence people first, so they will sink in thoroughly, or last, so they will be the most recently encountered data, and to limit the total amount of information imparted at one time. This has become a fine political art. For example, those who read that children of divorce are "more than twice as likely" to suffer faulty social development as children from intact marriages seldom grasp the fact that over 75 percent of both classes of kids turn out OK.

Much humor arises from abrupt divergences from expectations. "A passenger fell from an airplane. Fortunately, with a parachute. Unfortunately, it didn't open. Fortunately, there was a haystack below. Unfortunately, it contained a pitchfork. Fortunately, the passenger missed the pitchfork. Unfortu-

nately, missing the haystack." The humor of this grim recitation arises from the repeated dashing of conclusions developed on the basis of each ensemble of facts that was good enough at any given moment.

David R. Burwasser  
Oberlin, Ohio

**Aren't democratic elections** examples of the large-scale take the best approach?

The news media and special interest groups, acting "for the people," try to uncover as much information as they can about the candidates and their positions on issues. People "take the best" based on the information they have.

No one I know actually sits down and calculates the various characteristics and policy positions of each candidate, weights those positions according to some personal priority list, and then determines an ideal against which to compare each policy. It's too much effort. We all just "take the best." Are we all irrational?

Michael J. O'Donnell  
McLean, Va.

*If "take the best" applies to democratic elections, it may guide voters' choices first on the basis of recognizing one candidate more easily than his or her opponents. In that case, it would be rational, though cynical, for candidates to boost the familiarity of their names with voters, through ads and carefully managed media exposure, rather than dwelling on matters of substance.*

—B. Bower

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All letters subject to editing.

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**Using state capitals** may not be a valid recognition factor, particularly relating to size. There are frequently larger cities in the same states that are more recognizable. I seem to recall tests where high school graduates couldn't name the capitals of most states. Maybe the recognition factor hinged on something else for U.S. cities and that skewed the result.

James F. Longley  
Bolingbrook, Ill.

*If recognition of state capitals were near zero, students would have answered correctly at chance levels. However, they performed considerably better than that, indicating that recognition aided their decisions.* —B. Bower

**Frequency and percentage** are the same thing. The difference is, it takes a mathematician and a complete set of data to use Bayes' theorem, whereas a "satisficing" algorithm would give as good or better results for the purpose of guessing which of the two events in ordinary experience is more likely.

Bayes' theorem tells you exactly how likely some event is. This is useful in its own right, since actual likelihood is often counterintuitive. A "take the best" algorithm could never tell you, for example, that Earth moves around the sun.

Kyle McDaniel Jr.  
Knoxville, Tenn.

*Frequency and percentage format the same information in different ways. Gigerenzer argues that humans have evolved to favor the frequency format. "Take the best" ranks types of information in a way that enables people to make decisions relevant to human experience, so it's not surprising that it doesn't apply to the physical movement of Earth in space.*

—B. Bower