The diversity of spoken languages is under threat, with at least half the world's 6000 to 7000 languages expected to disappear in this century, and "like many spoken languages, the very existence of some signed languages is threatened." A teaching assistant comments on his expectations of the recently approved union contract for teaching assistants at his university, University of California at Berkeley. A common misconception that PCBs were linked to a mass mortality of harbor seals in Europe in 1988 is debunked. And the challenges of meeting the nutritional needs of the global population are discussed.

Diminishing Diversity of Signed Languages

Many of the world's 6000 to 7000 spoken languages are threatened with extinction, as Bernice Wuethrich discusses in her News Focus article "Learning the world's languages—before they vanish" (19 May, p. 1156), and their disappearance will cripple attempts to probe the limits of linguistic diversity. But one crucial source of linguistic diversity is not mentioned in the article. Within the last 40 years, linguists have recognized that there are two major types of human languages: signed and spoken (*1*, *2*). There are perhaps 200 to 300 signed languages, but there has been no thorough survey done. Linguists now understand that signed languages exhibit the basic properties that make a communication system a language.

Research suggests that signed and spoken languages exhibit distinct patterns of variation (*3*). Although signed languages differ in their vocabularies, in word order, in the presence of auxiliary-like elements, and in other ways, they seem to be much less diverse typologically than are spoken languages. The relative uniformity of signed languages, in contrast to the typological diversity of spoken languages, may be due to the differing resources available to sign and speech, as well as to the differing perceptual and articulatory constraints imposed by the visual-gestural and oral-aural channels.

This is a fundamental hypothesis about the factors that determine the available structures for individual human languages, yet it has hardly been tested. Doing so demands that we examine a large sample of signed languages. But like many spoken languages, the very existence of some signed languages is threatened. The pressures of educational policy, of more prestigious spoken and signed languages, and of the ease of communication across once-formidable barriers mean that many signed languages may disappear before we have the faintest understanding of how much signed languages can vary. For example, the indigenous signed languages of Southeast Asia are being replaced by signed languages substantially influenced by American Sign Language or French Sign Language (*4*). Understanding and preserving linguistic diversity will require that we investigate both major types of human languages, signed and spoken.

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Unionization of Teaching Assistants

In her News Focus article "UC teaching assistants win first union contract" (26 May, p. 1311), Constance Holden quotes an anonymous University of California (UC) scientist as saying, "The [teaching assistant]–faculty relationship has been good; there wasn't much of anything that really needed to be fixed." This is true overall. The teaching assistant (TA)–faculty relationship was never the catalyst for formation of the union nor for recent contract negotiations. Most TAs at UC Berkeley, certainly in my fields, have excellent working relationships with faculty. Steven Olswang, vice provost of the University of Washington, is mistaken to suggest as he did in the article that union membership undermines the collegial relationship.

The concern on my campus is undergraduate class size, which is not controlled by faculty, most of whom would rather we have manageable workloads in order to do the best job we can as TAs. The union contract agreement is with the university administration; it provides controls and arbitration means to address matters that do not involve academic relationships with faculty, but rather such employee protections as the article reports (for example, health, safety, and discrimination issues).

In my mind, we are students first, but this does not warrant unfair labor practices. Ideally, this contract will now require the university administration and the TA body to behave professionally rather than arbitrarily. TAs will have an avenue of professional redress for legitimate workplace grievances, and we no longer have to experience the (admittedly sometimes random) strike mobilizations that disrupt undergraduate learning as well as graduate student teaching. There is no reason the union contract will adversely affect the TA-faculty relationship. Perhaps this more level playing field can contribute to the development of the professional, collegial relationships that my classmates and I expect of university careers.

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PCBs Not to Blame

Jocelyn Kaiser's report on the discussion of low-level dangers of polychlorinated biphenyls (PCBs) at the Society of Toxicology annual meeting (News Focus, 21 Apr., p. 424) repeats an incorrect and oversimplified, but persistent, generalization about the 1988 mass mortality of harbor seals in Europe. Objective analyses do not support the statement that PCBs can be "blamed for spurring a 1988 virus outbreak that killed 20,000 European harbor seals feeding on PCB-tainted fish."

These seals died in an outbreak of phocine distemper virus (PDV), a previously unknown morbillivirus (*1*). The environmental community has been suspicious that the die-off was precipitated by

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A previously unknown morbillivirus alone, not PCBs in conjunction with a virus, was the culprit in a mass mortality of harbor seals in 1988.

exposure to organochlorine (OC) compounds. Such speculation is not unfounded, because of the well-known immunotoxic effects of PCBs in laboratory animals, and indeed, a subsequent experiment showed that harbor seals fed market fish differing in a variety of OC pesticides and metabolites, PCBs, and other contaminants exhibited suppressed cellular immunity (*2*). However, no compounds were administered in isolation to pinpoint PCBs specifically, and other research does not support a causal relation with the incident.

One study that examined concentrations of PCBs in tissues of harbor seals that survived the epidemic in comparison with those that succumbed stated, "data are not sufficient to conclude that there was a direct link between mortality from PDV infection and OC contamination" (*3*). Another study that examined several factors, including OCs in tissues of seals during and after the epizootic, stated that results "should not be interpreted as implying that seals with high OC levels were therefore more vulnerable to mortality from PDV" (*4*). A third study in which harbor seals were exposed to dietary PCBs and then dosed with cell-cultured PDV showed no differences in mortality or antibody production in comparison with controls, even though some dosed seals had concentrations of PCBs in tissues greater than those of wild seals killed by the epizootic (*5*).

Authorities involved in the investigation of the European harbor seal mortality event have further noted that morbilliviruses have strong immunosuppressive effects in their own right through destruction of lymphoid tissue, are highly infectious and particularly virulent in immunologically naïve populations, and that past outbreaks have repeatedly resulted in high mortality in such populations of terrestrial mammals, even before the synthesis and manufacture of PCBs (*6*).

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To Improve Nutrition for the World's Population

The genetic engineering of rice grains to produce provitamin A (β-carotene), described by X. Ye *et al.* (Reports, 14 Jan., p. 303), is an example of the best that agricultural biotechnology can offer society. In the Perspective by Mary Lou Guerinot that accompanies Ye *et al.*'s report ("The green revolution strikes gold," p. 241), however, there are two points that are of concern.

First, Guerinot says that corn expressing *Bacillus thuringiensis* (Bt) toxin minimizes the application of insecticides for corn insect control. In fact, insecticide applications are little reduced because Bt corn only controls the European corn borer, which is a relatively minor pest on corn, especially as compared with the corn rootworm pest complex (*1, 2*). More than 90% of the insecticide applied to corn is applied for control of the rootworm complex. Furthermore, the environmental effects of Bt corn pollen on the monarch butterfly and other beneficial insects, as demonstrated by laboratory research, need to be carefully assessed under field conditions (*2*).

Second, about half the world population eats rice daily, so as Guerinot points out, adding vitamin A to rice will benefit many