resulted in cyclic design iterations that have scarcely gone beyond the conceptual, or preliminary, stage.

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## Surfing the Neuroscience Net

"Surfing the Net" can be confusing if one does not know what to look for or where to look. The recent article by Floyd E. Bloom (15 Nov., p. 1104) will be helpful to neuroscientists and provides information for anyone with specific or general questions about neuroscience.

For researchers interested in neurodegenerative diseases, the catalog of sites at http://www.sciweb.com/directories.html can be useful. This site provides a list of World Wide Web sites on many subjects, including a disease-associated site at http://www.sciweb.com/dir_disease.html. This site has listings of other sites on various diseases, including Alzheimer's, at http://med-amsa.bu.edu/Alzheimer/home.html. One site at http://med-amsa.bu.edu/Alzheimer/neurodis.htm has listings for other neurodegenerative diseases, including Parkinson's, Huntington's, and multiple sclerosis.

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Bloom's superb article omitted one Web site that allows full-text searching on a database of more than 110,000 Web pages, all of which have been prequalified as relevant to neuroscience. The site allows easy access to an estimated 5000 megabytes of actual Web page content, including text, images, and movies. English and several foreign languages can be used, or a special query syntax can be employed by those wishing to master it.

The URL for this site is http://www.acsiom.org/nsr/neuro.html. The service is free, noncommercial, and open to all. The only request is that users limit the total number of URLs requested for any single query to 200. There is no limit on the total number of different queries one may submit.

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## In Focus

The Perspective "The imaging of individual atoms" by David A. Jefferson (18 Oct., p. 369) does an excellent job of helping the reader appreciate the work of P. D. Nellist and S. J. Pennycook (Reports, 18 Oct., p. 413) in advancing atomic resolution microscopy. Jefferson correctly points out that, while x-rays and neutrons have contributed to atomic resolution structure studies of crystals, they have not done so when it comes to single individual atoms. But his statement that "no lens is available for either x-rays or neutrons" misses an active and growing area of research. On the basis of pioneering work by A. V. Baez (*1*), diffractive lenses (zone plates and Bragg-Fresnel structures) have been fabricated to focus both x-rays (*2*) and neutrons (*3*). The

best focus attained so far with x-rays (less than 50 nanometers) is five times finer than what lenses can achieve for visible light (4).

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*Response*: I agree with Kirz and regret that my Perspective made no reference to the current work on diffractive lenses for x-rays and neutrons. Although great strides have been made in this field, we are still a long way from achieving resolution on the atomic scale with such lenses, so they cannot contribute as yet to the imaging of individual atoms. Nevertheless, Kirz's point is a valid one, and the lack of atomic resolution with such lenses in no way detracts from their importance, either current or potential.

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## Brain Activation and Sentence Comprehension

In their report "Brain activation modulated by sentence comprehension" (4 Oct., p. 114), M. A. Just *et al.* conclude that "[t]he answer to the question of how the brain responds to increased comprehension demand is that it recruits more neural tissue. . . ." On this basis they argue that the relation between cognitive functions and brain sites is not fixed, and thus that there "cannot be a static cartography of brain anatomy." We see two problems with this argument.

Just *et al.* measured neural activation in four brain areas with functional magnetic resonance imaging (fMRI) during comprehension of three sentence types presumed to vary in processing complexity. The number of voxels showing activation significantly above baseline increased with sentence complexity. According to Just *et al.*, this finding implies that more neural tissue is recruited as processing demand increases.

We disagree. For purely statistical reasons, the identical result (an increase with sentence complexity in the number of voxels reaching a significance threshold) is expected under an alternative hypothesis—that the same tissue becomes increasingly active with increasing sentence complexity.

Consider a situation in which neural activity is uniformly elevated above baseline throughout a brain region. Because of noise, some voxels in that region are likely to fall short of the criterion for classifying a voxel as activated above baseline. If the region's activation is only slightly higher than baseline, the number of such voxels will be large; however, as the region's activation increases, more voxels will reach criterion (other things being equal). Thus, even if the tissue implicated in comprehension were exactly the same across sentence types, a uniform increase with sentence complexity in the activation of that tissue would lead to the reported result. Therefore, the result