(3) In Fig. 1*d* of Morrone *et al.*[1], the Mona Lisa is so poorly perceived that it resembles our Fig. 3*a* in ref. 2, which we called a masked image. We wonder how Morrone *et al.* can regard the image in their Fig. 1*d* "of higher quality than the lowpass filtered version". Since they did not use some objective method to compare the visibility of the *same* images masked by their windmill with our annulus-shaped spectral noise, any inference to critical-band masking appears superficial.

Finally, consider the more general problem that Morrone *et al.* indirectly questioned: the validity of spatial-frequency channels in vision. If critical band masking does not take place in two-dimensional vision, then spatial-frequency-tuned channels have a limited role. That in preattentive vision only local line contours can be detected, and global periodicities are unnoticed, led one of us to a texton theory of texture discrimination and effortless perception[8–10]. However, in attentive vision such as looking for a recognizable face, global processes (including the detection of periodicities) must be important. Whether the detection of these periodicities is undertaken by early analysers (which can be fatigued or masked) or is the result of higher cognitive processes (for which critical-band masking is not expected) remains to be seen.

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MORRONE *ET AL.* REPLY—For us the most intriguing aspect of Harmon and Julesz's[1] ingenious demonstration is that blocking does not merely degrade the image, but renders recognition impossible. Normal masking (such as their Fig. 3*a*[1] or indeed our Fig. 1*d*[2]) degrades the image but leaves it still recognizable.

Measurements in our laboratory show that masking with one-dimensional noise at 22.5° reduces threshold of high spatial frequency gratings by a factor of only 2, compared with a factor of more than 30 for parallel noise[3]. In any event, even if the noise did encroach into the critical band of the spurious high frequencies it would add much more energy than it could have removed by masking.

Finally, both we[2] and Piotrowski and Campbell[4] have demonstrated that recognizability is restored by phase scrambling of the spurious high frequencies, without interfering with their amplitudes, either physically or by masking. This is interesting, as classical masking and summation are phase independent (ref. 5 and M.C.M., D.C.B. and J.R., unpublished).

We do not challenge the notion of critical-band masking. We recognize the importance which it clearly has in visual processes, but we point out that it is not a sufficient explanation here. There is a substantial body of evidence, both from single cell recordings in cat and of evoked potentials in man, for nonlinear inhibitory processes. These processes presumably have some role in visual analysis, which we attempted to elucidate.

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Identification of γ-ray lines observed from SS433

RECENTLY, Lamb *et al.*[1] reported preliminary evidence for γ-ray line emission from the region of SS433. These authors suggested that observed γ-ray line features at 1.2 and 1.5 MeV may be the red- and blue-shifted components of the 1.369-MeV line from the first excited state to ground-state transition in ^{24}Mg. Here we point out some serious difficulties with this interpretation of the observed γ-ray lines.

In their model, Lamb *et al.*[1] propose that fast-moving ^{24}Mg nuclei ($v \approx 0.26c$, that is, 33 MeV per nucleon) undergo inelastic collisions with ambient protons to produce the 1.369-MeV γ ray. The apparent absence of similar inelastic γ-ray lines from normally more abundant isotopes such as ^{12}C and ^{16}O is interpreted as evidence for the absence of these nuclei in SS433. Although such an elemental distribution would be very different from that observed in the Solar System, such a possibility cannot be ruled out on this basis alone. However, there are ways to test this hypothesis.

γ-Ray production cross-sections have been measured by Dyer *et al.*[2] for proton-induced reactions on C, N, O, Ne, Mg, Si and Fe from threshold to $E_p = 23$ MeV. For proton bombardments of ^{24}Mg at $E_p = 23$ MeV, in addition to the 1.369-MeV line, there is a strong doublet near 1.64 MeV from the 1.634-MeV ^{20}Ne line produced via the ^{24}Mg(p, pα)^{20}Ne reaction and the 1.636-MeV ^{23}Na line produced via the ^{24}Mg(p, 2p)^{23}Na reaction. At this bombarding energy, the ratio of the cross-sections for the 1.64-MeV line and the 1.369-MeV line is 0.85. Zobel *et al.*[3] report a ratio of ~0.9 at $E_p = 30$ MeV. Thus, if the 1.2- and 1.5-MeV features observed by Lamb *et al.*[1] were due to inelastic scattering of ^{24}Mg on protons, one would expect to observe lines of nearly the same intensity at ~1.4 and 1.8 MeV.

The apparent absence of any significant γ-ray lines other than those at 1.2 and 1.5 MeV thus argues strongly against the proposed model of Lamb *et al.*[1]. It is also interesting to note that the presence of ^{24}Mg lines and the absence of other lines not only would make Mg overabundant compared with carbon and oxygen, but would suggest that it is overabundant compared with heavier elements, particularly Fe, in view of the large cross-sections found at $E_p = 23$ MeV for the production of γ rays from Fe at 0.847, 0.931 and 1.317 MeV[2]. Thus, it seems that an alternative explanation must be sought for the intriguing observations made by Lamb *et al.*[1].

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