and foremost, models show that if it worked and was scaled up to the global oceans and implemented for 100 years, it could at best postpone the trajectory of climate change by a few years. Second, manipulations of the oceans at this scale will (and indeed must) alter marine ecosystems dramatically.

Our Policy Forum challenges specific claims outlined in the patent applications for ocean fertilization—i.e., that it is an easily controlled, verifiable process that mimics nature and that it is an environmentally benign, long-term solution to atmospheric CO_2 accumulation. Johnson and Karl disagree. We stand by our statements as they apply to ocean fertilization for commercial purposes. If carbon sequestered via ocean fertilization could be traded, the economic incentives would almost certainly lead to multiple manipulations by more than one company or group, with large-scale, long-term cumulative effects that could not be attributed to any one application. We agree with Johnson and Karl that episodic nutrient enrichment events are part of the natural biogeochemical cycles of the oceans and that any single small-scale application of iron would have no lasting effect on the ocean ecosystem. But this is not true of scaled-up, long-term efforts guided by the free market in a global commons. Moreover, a requirement of any carbon sequestration option in the carbon credit market is that it must be verifiable. This is not "easily" done for ocean fertilization, especially in the context of multiple manipulations. In fact, it is currently beyond our capabilities.

We explicitly do not call for restriction of basic research on how iron affects ocean ecosystems or biogeochemical cycles. Indeed, much research is needed to improve our understanding of the carbon cycle and its connection to climate, including possible consequences of altered fluxes of nutrients to the ocean. But the prospect of ocean fertilization for carbon credits should not be driving this research.

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Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the previous 6 months or issues of general interest. They can be submitted by e-mail (science_letters@aaas.org), the Web (www.letter2science.org), or regular mail (1200 New York Ave., NW, Washington, DC 20005, USA). Letters are not acknowledged upon receipt, nor are authors generally consulted before publication. Whether published in full or in part, letters are subject to editing for clarity and space.

Rock Art Revisited

TWO PIECES OF ENGRAVED RED OCHRE FROM Blombos Cave, South Africa, dating to 77,000 years ago and displaying "motifs" evidencing the existence of "arbitrary conventions unrelated to reality-based cognition" are reported by Henshilwood *et al.* ("Emergence of modern human behavior: Middle Stone Age engravings from South Africa," Reports, 15 Feb., p. 1278).

We propose the following hypothesis as an alternative to that presented by Henshilwood *et al.*: that the Blombos Cave engraved ochres represent small, portable objects upon which reality-based tallies were recorded. Three lines of evidence support this hypothesis: (i) the worn condition of the ochre objects, (ii) duplications of lines consistent with erasure and reuse, and (iii) the sequence in which lines were engraved.

First, both the SAM-AA 8937 and 8938 pieces exhibit irregular surfaces blemished by pits and scrapes. Although it may be that preparing surfaces and engraving resulted in objects that look worn, it is also plausible to suggest that a utilitarian function produced a worn appearance. Second, the occurrence of duplicate parallel lines is consistent with active use and reuse. We suggest that such lines were caused by reuse after incomplete erasure by grinding rather than simultaneous scoring occasioned by a change in position of the engraving tool. Finally, the sequence of engraving, wherein a series of lines was first engraved in one direction and then sequentially cross-hatched, suggests that the lines may have served a utilitarian recording or counting function.

We consider the evidence equivocal as to the nature of the symbolic content of the engraved ochre pieces. Perhaps they reflect cognitive shifts facilitating both art and science. Whether motifs, tallies, or yet some other alternative, the patterns on the engraved ochre provide a fleeting glimpse into the minds of those inhabiting Africa some 35,000 years before the beginning of the Upper Paleolithic. Modern minds should remain open to the range of cognitive possibilities represented by these enigmatic data.

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Beauty, Biological Weapons, and Botox

AS DONALD KENNEDY ELEGANTLY STATES IN his editorial "Beauty and the beast" (1 March, p. 1601), "Who would have imagined a world in which terror weapons are employed as beauty aids?" He is right; who would have ever imagined a world in which the poison botulinum toxin would effectively address problems such as back pain, tension headaches, migraine headaches, anal fissures, hyperhidrosis, fibromyalgia, and the neuralgia that lingers after shingles? Could anyone have envisioned that this agent would offer relief to individuals with cerebral palsy or help with the symptomatic treatment of multiple sclerosis?

I had never anticipated a time when my "in office" trainees would include neurologists and when consultations with pain specialists would occur regularly. Suddenly I find myself, a dermatologist, conducting clinical studies with neurologists to develop uses of this terrible toxin.

I enjoy making people look better. Is there value in what I do? You might read *Survival of the Prettiest: The Science of Beauty* (*1*) or even *The Adonis Complex: The Secret Crisis of Male Body Obsession* (*2*). Or I could introduce you to patients of mine with HIV who are on highly active antiretroviral therapy and have lost all their facial fat and, therefore, refuse to leave the house, or maybe the Parkinson's patients, women in particular, who have such severe hair loss from their medication that they stop taking it. Yet, many of the uses I have found for botulinum toxin came from my initial experience with it in cosmesis.

In the field of aesthetic medicine, I am not convinced that the Food and Drug Administration (FDA) has the best record in dealing with these agents. I remember all too well when the FDA took aim at breast implants and created a level of medical hysteria that, to this day, remains unsurpassed.

Although Saddam Hussein may have barrels of botulinum toxin, it would be a poor choice for a biological weapon. The toxin-liberating bacteria are very unlikely to work through inhalation, because they are anaerobes and will not germinate in the air. Furthermore, although their mode of

entrance to the body can be through food, the mortality rate would only be 20%.

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Prospects for an AIDS Vaccine

JON COHEN PRESENTS A BLEAK VIEW OF THE prospects for an AIDS vaccine in his article about the National Institutes of Health's decision not to fund a clinical trial of its leading candidate for such a vaccine ("Disappointing data scuttle plans for large-scale AIDS vaccine trial," News of the Week, 1 Mar., p. 1616). Disappointed lead investigators in the study comment that the immune correlate(s) of protection are a mystery that might have been elucidated by the trial and that we need to find out if vaccines work in humans, even if we do not know why.

We find this pessimism puzzling, because the prospects of achieving a safe and effective vaccine to control the AIDS epidemic are now quite encouraging (*1*, *2*). Abundant published evidence indicates that readily attainable levels of cell-mediated immunity (CMI), although they do not prevent infection, can suppress viremia to undetectable levels within weeks after mucosal or intravenous challenge by heterologous virus strains, prevent loss of helper T cells, prevent progression to disease, and presumably prevent transmission of virus to uninfected subjects (*3*–*6*). These results have mainly been obtained with the rhesus monkey/SIV model of human HIV infection, and they are consistent with results from studies of scheduled treatment interruptions of highly active antiretroviral therapy (STI) in HIV-infected humans (*7*, *8*). Effective levels of CMI have consistently been attained by parenteral administration of a prime/boost regimen involving naked DNA followed by replication-defective recombinant modified vaccinia virus Ankara or canarypox virus (*9*, *10*). Recently, CMI responses to DNA have been increased 100-fold by adsorption onto cationic microparticles, and additional recombinant viruses have been described, including a recombinant HIV that replicates only in the presence of the antibiotic doxycycline (thus, the reverse of STI) (*11*, *12*).

Rather than viewing the scuttling of an AIDS vaccine trial as a setback, one could reasonably argue that all such vaccine trials should be reconsidered in light of the success of the prime/boost regimen in the rhesus/SIV model.

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CORRECTIONS AND CLARIFICATIONS

NEWS FOCUS: "MgB_2 trades performance for a shot at the real world" by R. Service (1 Feb., p. 786). The standard measure used to express the cost of transmitting current over a meter had incorrectly appeared as dollars per kA/m. The correct expression is dollars/(kA m).