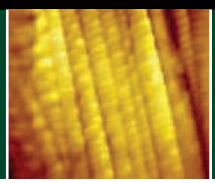

LETTERS

edited by Etta Kavanagh

Editorial Expression of Concern

IN THE 17 FEBRUARY 2006 ISSUE, WE PUBLISHED THE STUDY "*CDX2* GENE EXPRESSION AND trophectoderm lineage specification in mouse embryos" by K. Deb *et al.* (*1*). It has come to our attention, through communication with Robert Hall of the Provost's office at the University of Missouri Columbia and the senior author of the paper, R. Michael Roberts of the University of Missouri Columbia, that there is an ongoing investigation of this study by the University of Missouri. We are therefore informing readers that the results reported therein may not be reliable.

DONALD KENNEDY

Editor-in-Chief

Reference

1. K. Deb, M. Sivaguru, H. Yul Yong, R. M. Roberts, *Science* **311**, 992 (2006).

On the Lack of Women in Academic Science

REFLECTING ON MY OWN EXPERIENCES IN the 1950s and 1960s with discrimination against the hiring of women in physics and the foolish and transparent excuses that were offered to me, the report of the U.S. National Academies of Science on the paucity of women scientists in academia ("Universities urged to improve hiring and advancement of women," A. Lawler, News of the Week, 22 Sept., p. 1712) is not new information. However, I was confident 40 years ago when I was offered the opportunity to start the physics department at George Mason University that talented women would apply for positions in our department. Women realized that the presence of a senior woman in a decision-making role signified that their application would be looked at equitably. This simple fact meant that we were always able to select good faculty from both genders. We never set out to specifically hire women. It was self-fulfilling. During these 40 years, seven men and two women have served as chairs of the department. Currently, our department, with its 10 women faculty, is 35% female among the tenured and tenure-track faculty. According to a 2005 survey by the Committee of the American Physical Society on the Status of Women in Physics (*1*), this statistic makes it the nation's leader among departments having more than 10 faculty members.

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Reference

1. "Women in Physics and Astronomy, 2005" (American Institute of Physics, College Park, MD, 2005).

THE RECENT ARTICLE ("UNIVERSITIES URGED to improve hiring and advancement of women," A. Lawler, News of the Week, 22 Sept., p. 1712) discussing the U.S. National Academies of Science (NAS) report *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering* (*1*) highlights several crucial issues. Among these is the conclusion that the culture and institutions of science—not a lack of talent or inherent differences between men and woman—drive inequalities in hiring, promotion, and retention. A key aspect is the finding that more than half of male faculty members have a stay-at-home spouse, whereas only 10% of women faculty are in the same situation. This implies that female faculty have greater familial and/or parental responsibilities, often in conflict with essential career activities. The imbalance is addressed by recommendations in the NAS report urging universities to enact policies allowing "flexibility that faculty need across the life course" [(*1*), p. 139]. However, the situation is more complex. Often overlooked is subtle discrimination against married academic couples attempting to equalize child-rearing and other familial arrangements. For example, although many employers have generous family leave policies, they may differ for men and women, leading to substantial financial, professional, and personal costs to couples that attempt to share responsibilities. (My husband and I discovered this when our second child was born. My husband's employer, although having generous child leave policies for women, allowed only a single day of parental leave for men at the time.) Moreover, if men with substantial familial responsibilities are also promoted more slowly than women, then fewer colleagues at higher levels have faced the same difficult tradeoffs, leading to lack of appreciation for the complexity of these issues. Clearly, in addition to policies that target explicit discrimination against women, there is a need to more carefully consider how the academic culture selects against both men and women who have substantial child-rearing or other familial responsibilities.

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Reference

1. Committee on Maximizing the Potential of Women in Academic Science and Engineering and the Committee on Science, Engineering, and Public Policy, *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering* (National Academies Press, Washington, DC, 2006) (available at http://darwin.nap.edu/openbook.php?record_id=11741&page=R1).

IN THE U.S. NATIONAL ACADEMIES OF SCIence (NAS) report *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering*, the 18-member panel found underrepresentation of females in academia to be "deeply troubling and

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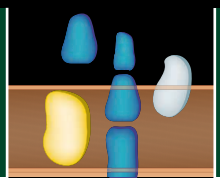

Risks in Alzheimer's disease treatments

602

A marine puzzle

607

embarrassing" ("Universities urged to improve hiring and advancement of women," A. Lawler, News of the Week, 22 Sept., p. 1712). Strangely, this 18-member panel does not find the fact that only one of its members was male to be troubling. If underrepresentation equals bias, this panel is biased by its very own criteria. In response to charges of bias, Donna Shalala, who chaired the NAS panel, pointed out to the *New York Times* (*1*) that the panel that reviewed the report had 10 males on it. On the face of it, that may seem reasonable, yet I am left asking, what if a panel of 17 men and one woman made important and far-reaching recommendations and then referred these recommendations to a gender-balanced committee for "rubber stamp" approval?

There are, in fact, cultural reasons why women are less represented in academia. Academic jobs favor individuals who are able to commit to the long hours that it takes to make it to the top. Many such individuals have stay-at-home spouses. It is a legitimate question to ask why women are so much more likely to leave the career path for the homefront. The data-driven conclusion is that women, even in higher-income brackets, tend to be married to men that make even more money on average than they do (*2*). This economic differential makes it unlikely that, when it comes time to raise children, the husband will be the one to stay home with the children. If we are really serious about recruiting women to academia, we must give female scientists honest advice. Perhaps rather than reflexively blaming every gender difference on "bias," we should be telling women to marry a man who makes less money than she does. It may be strong medicine, but recruiting the best talent demands that we examine all of the potential causes of gender imbalance.

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References

1. C. Dean, "Bias is hurting women in science, panel reports," *N.Y. Times*, 19 Sept. 2006, p. A22.
2. U.S. Census Bureau, Current Population Survey 2006 Annual Social and Economic Supplement, FINC-05 (available at http://pubdb3.census.gov/macro/032006/faminc/new05_001.htm).

Property Rights and Ocean Governance

IN THEIR INSIGHTFUL POLICY FORUM "Resolving mismatches in U.S. ocean governance" (4 Aug., p. 617), L. B. Crowder and colleagues identify several key weaknesses in oceans governance. They propose "ocean zoning" to replace the current "mismatched and fragmented approaches" and ad hoc decision-making, and they provide insights into present spatial and temporal governance mismatches. To these insights can be added a third mismatch—property rights.

The importance of well-defined property rights in the success of natural resource governance (ocean- or land-based) is well recognized, as is the impact of mismatches (*1*–*3*). When mismatched property rights distributions occur, the result can be as fragmenting as those described by Crowder *et al.*

Property rights are not a unitary concept, but rather a bundle of separable rights that can be split or shared in different ways. Ostrom and Schlager (*4*) break property rights into a grouping of operational-level rights, including access (right to enter), withdrawal (right to extract), management (right to regulate use), exclusion (right to deny access), and alienation (right to sell, lease, or transfer).

Coastal fisheries resource management in New Zealand illustrates how conflicting property rights distributions can result from ad hoc decision-making [see Supporting Online Material (*5*)], yielding a pattern of fragmentation similar to that described by Crowder *et al.* Five sectors are shown, with each having a distinct bundle of rights. Property rights also can have spatial and quantitative distributions.

Unintended conflicts can result. For example, commercial fishers' right to a certain catch size can be diluted by their inability to fish in new marine reserves, resulting in greater harvesting pressure and subsequent quota cuts for stocks outside the new reserve. Here the conflict between spatially and quantitatively defined rights leads to a diminution in the value of the quantitatively defined right. In addition, poorly defined property rights

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may on occasion be preferred. Recreational fishers have actively fought efforts to define their property rights, perhaps believing that poorly defined rights (but strength at the ballot box) protect their interests.

Property rights are critical to strong natural resource governance regimes. Explicitly including each sector's property rights in ocean zoning would further strengthen the proposed governance approach.

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References

1. G. D. Libecap, *Contracting for Property Rights* (Cambridge University Press, New York, 1989).
2. S. S. Hanna *et al.*, *Rights to Nature: Ecological, Economic, Cultural, and Political Principles of Institutions for the Environment* (Island Press, Washington, DC, 1996).
3. E. Ostrom *et al.*, *Science* **284**, 278 (1999).
4. E. Ostrom, E. Schlager, in (*2*), pp. 127–156.
5. Supporting Online Material at www.sciencemag.org/cgi/content/full/314/5799/593/DC1.

Response

YANDLE COMMENTS THAT CONFUSED property rights in the sea can also produce fragmentation and mismatches. Of course, a comprehensive system of ocean zoning must specify the rights and obligations of users within each zone. Some activities within a particular zone may occur by right, while others may be allowed only by permit (*1*).

Fundamentally, ocean governance must rest on a clear distinction between imperium (the exercise of authority) and dominium (property rights) (*2*), a distinction ignored by Yandle. The oceans and their resources are predominately common property held in trust for the people and managed for the benefit of the public by governments of coastal nations (*3*–*5*). U.S. courts sometimes slide perilously close to the idea of the seas as private or public property, but more often, they call on the government to exercise its trust responsibility (*3*). Further, prominent scholars of ocean law have discussed priority rules applicable to resolving conflicts over the use of ocean trust resources (*6*–*8*).

To carry out their trust responsibilities, governments can and should exercise authority to apply the principles of ecosystem-based management (EBM). Before approving a new generation of ocean industrial facilities, governments should employ ocean zoning as a scientifically based platform for resolving conflicts among new uses as well as ongoing activities like fishing and maritime commerce.

Governments have created certain limited private rights or quasi-rights to marine resources. Some people see the solution to problems of ocean governance in wholesale privatization (*9*), but we disagree. Privatization strategies are significantly more problematic in the seas than they are on land.

We should continue to treat marine systems as common property rather than as private or public property. Understanding that the authority of the government over common property does not include the right to permanently dispose of (sell, grant, or transfer) ocean space to private owners is key to protecting the rights of the common property owners (i.e., the people). As demands for ocean resources (including exclusive access) multiply, we need management systems that protect the public interest and at the same time provide security of investment for existing and new ocean industries. The needs of private investors can be met while protecting the public trust by contracts (leases, easements, rights of way, and concessions) that ensure periodic review of performance and updating of contract terms to take into account new knowledge (regarding ecosystems and technology) (*5*).

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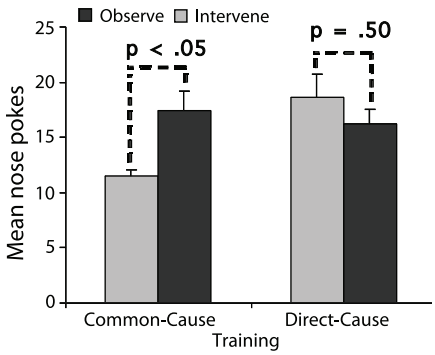
References

1. The Great Barrier Reef Marine Park Authority's zoning system provides a useful model; see www.gbrmpa.gov.au/corp_site/management/zoning
2. O. R. Young, *Nat. Res. J.*, in press.
3. *United States v. California*, 332 U.S. 19 (1947).
4. P. H. Sand, *Global Environ. Politics* **4,** 47 (2004).
5. G. Osherenko, *Ore. J. Environ. Law Litigation*, in press (a preprint is available at http://law.bepress.com/expresso/eps/1537).
6. R. G. Hildreth, *J. Environ. Law Litig.* **8**, 221 (1993).
7. J. H. Archer, M.C. Jarman, *Ocean Coast. Manage.* **17**, 253 (1992).
8. M. C. Jarman, *Alb. L. J. Sci. Technol.* **4**, 7 (1994).
9. R. D. Eckert, *The Enclosure of Ocean Resources: Economics and the Law of the Sea* (Hoover Institute Press, Stanford, CA, 1979), p. 16.

CORRECTIONS AND CLARIFICATIONS

2006 Visualization Challenge (22 Sept., p. 1729). The affiliation of one of the judges, Felice Frankel, was incorrect. It should be Senior Research Fellow, FAS, Harvard University, Initiative in Innovative Computing, IIC, Cambridge, Massachusetts. In the winning entry for the Interactive Media category, "Cerebral Vasculature of Craniopagus Conjoined Twins," the name of credited contributor Kenneth Salyer was misspelled. In the text for the second-place winner, "A Real-Time Audio and Video Sound Visualization Tool," videos were said to be available in "most" cases. In fact, they are available in "many" cases.



Reports: "Causal reasoning in rats" by A. P. Blaisdell *et al.* (17 Feb., p. 1020). The wrong input data were used to generate Fig. 1B. The corrected figure is shown here. The error does not change the conclusions of the paper.

TECHNICAL COMMENT ABSTRACTS

COMMENT ON "Preindustrial to Modern Interdecadal Variability in Coral Reef pH"

Richard J. Matear and Ben I. McNeil

Based on the boron isotopic composition of coral from the southwestern Pacific, Pelejero *et al*. (Reports, 30 September 2005, p. 2204) suggested that natural variations in pH can modulate the impact of ocean acidification on coral reef ecosystems. We show that this claim cannot be reconciled with other marine carbon chemistry constraints and highlight problems with the authors' interpretation of the paleontologic data.

Full text at www.sciencemag.org/cgi/content/full/314/5799/595b

RESPONSE TO COMMENT ON "Preindustrial to Modern Interdecadal Variability in Coral Reef pH"

Carles Pelejero, Eva Calvo, Malcolm T. McCulloch, John F. Marshall, Michael K. Gagan, Janice M. Lough, Bradley N. Opdyke

Coral reefs are exceptional environments where changes in calcification, photosynthesis, and respiration induce large temporal variations of pH. We argue that boron isotopic variations in corals provide a robust proxy for paleo-pH which, together with the likely concomitant changes in the reconstructed partial pressure of CO_2 (P_{CO_2}) calculated by Matear and McNeil, fall within ranges that are typical of modern coral reef ecosystems.

Full text at www.sciencemag.org/cgi/content/full/314/5799/595c