



LETTERS

edited by Jennifer Sills

Tracking the Source of Glacier Misinformation

A RECENT NEWS OF THE WEEK STORY ON HIMALAYAN GLACIERS (“NO SIGN YET OF HIMALAYAN meltdown, Indian report finds,” P. Bagla, 13 November 2009, p. 924) highlights how inadequately reviewed material makes its way into the public consciousness. One source, Working Group II (WG-II) of the Intergovernmental Panel on Climate Change (IPCC) [pp. 493 and 494 in (1)] reproduces several errors. The Working Group writes that “[g]laciers in the Himalaya are receding faster than in any other part of the world” and that “the likelihood of them disappearing by the year 2035 and perhaps sooner is very high if the Earth keeps warming

at the current rate. Its total area will likely shrink from the present 500,000 to 100,000 km² by the year 2035.” Another source (2) advances a no-less mistaken conjecture, not discussed in Bagla’s News of the Week story, that Himalayan glaciers are responding to the climate of as long as 15,000 years ago.

The IPCC Fourth Assessment, particularly of the physical science basis for the changes, is mostly accurate, but the first WG-II sentence above derives from a World Wildlife Fund report (3), which cites a news story (4) about an unpublished study (5) that neither compares Himalayan glaciers with other

rates of recession nor estimates a date for disappearance of Himalayan glaciers. Himalayan rates of recession in the WG-II report (1) are not exceptional (6). In the second WG-II sentence, “its” cannot refer to Himalayan glaciers [area about 33,000 km² (7)], and may refer to the world total area of glaciers and ice caps. A bibliographic search suggests that the second WG-II sentence is copied inaccurately from (8), in which the predicted date for shrinkage of the world total from 500,000 to 100,000 km² is 2350, not 2035.

The claim that Himalayan glaciers may disappear by 2035 requires a 25-fold greater loss rate from 1999 to 2035 than that estimated for 1960 to 1999 (7). It conflicts with knowledge of glacier-climate relationships and is wrong. Nevertheless, it has captured the global imagination and has been repeated in good faith often, including recently by the IPCC’s chairman (9).

These errors could have been avoided had the norms of scientific publication, including peer review and concentration upon peer-reviewed work, been respected.

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References and Notes

1. R. V. Cruz *et al.*, in *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, M. L. Parry *et al.*, Eds., (Cambridge Univ. Press, Cambridge, 2007), pp. 469–506.
2. V. K. Raina, *Himalayan Glaciers* (Discussion Paper, Ministry of Environment and Forests, Government of India, New Delhi, 2009).
3. WWF, *An Overview of Glaciers, Glacier Retreat, and Subsequent Impacts in Nepal, India and China* (WWF Nepal Program, Kathmandu, 2005).
4. F. Pearce, *New Scientist*, **162** (2189), 18 (1999).
5. S. I. Hasnain, “Report on Himalayan glaciology: Appendix 6, unpublished minutes of the July 1999 meeting” (Bureau of the International Commission for Snow and Ice, 1999); www.cryosphericsscience.org/docs.html.
6. WGMS, *Fluctuations of Glaciers 2000–2005, Vol. IX* (World Glacier Monitoring Service, Zurich, 2008).
7. M. B. Dyurgerov, M. F. Meier, *Occasional Paper 58* (Institute of Arctic and Alpine Research, Univ. of Colorado, Boulder, CO, 2005).
8. V. M. Kotlyakov, *Tech. Doc. Hydrol.* **1**, 61 (1996).
9. C. Morris, “Why are the Himalayan glaciers melting?” (http://news.bbc.co.uk/2/hi/south_asia/8337604.stm).
10. This Letter was published online 20 January 2010 (www.sciencemag.org/sciext/eletters/#12949).

A Role for Postdocs in Undergraduate Education

IN HIS EDITORIAL, “GALVANIZING SCIENCE departments” (4 September 2009, p. 1181), C. Wieman described ongoing programs at University of Colorado, Boulder and University of British Columbia in Vancouver that are successfully implementing new effective, research-based teaching methods in several science, technology, engineering, and mathematics (STEM) departments. As Wieman points out, transformations in the STEM teaching culture at large research universities are sorely needed, but such institutional change is notoriously difficult to bring about. It is therefore worth a closer look at how these two programs work. Their success has been primarily due to the science education specialists Wieman mentions, who are called Science Teaching Fellows (STFs) in Boulder. It may not have been clear from the Editorial that these are postdocs. Most earned Ph.D.s in their respective science disciplines (not education), but developed strong interests in pedagogy and educational research during their training.

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One of their missions is to assist departmental faculty with the kinds of course transformation that Wieman describes. As postdocs in the discipline, they have the content knowledge required for effective development of educational materials, and they are not threatening to faculty, as outsiders with educational degrees might be. Their ability to effect faculty change derives from their familiarity with the educational research evidence, their enthusiasm and people skills, and the assistance they can offer in implementing new teaching approaches, which can be labor-intensive.

The other mission for STFs is to gain science education training, which is uncommon within science departments and is valuable in light of the growing number of college and university science departments desiring permanent Science Faculty with Education Specialties (SFES) (1, 2). These individuals are discipline-based science faculty who make scholarly work in science education part of the fabric of the science disciplines themselves. SFES are undertaking efforts in the three science education arenas of undergraduate science education, K-12 science education, and discipline-based science education research, as well as in basic science research (2), furthering the current push to improve STEM education at all levels.

The Boulder and Vancouver programs, unique to our knowledge, should be transferable to any institution that can provide strong, pedagogically informed leadership (preferably from within STEM departments) and financial support for STFs. Funding agencies and foundations could have a major impact on improving STEM education by supporting such postdoctoral positions, thereby enabling the replication of these programs at other universities and promoting the training of more SFES.

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References

1. S. D. Bush *et al.*, *CBE Life Sci. Educ.* **5**, 297 (2006).
2. S. D. Bush *et al.*, *Science* **322**, 1795 (2008).

Taking a Cue from the Silver Screen

IN HIS EDITORIAL "PROMOTING SCIENTIFIC standards" (1 January, p. 12), B. Alberts notes that many scientific projects are carried out by large teams, which makes attributing author contributions a problem. The concept of authorship is derived from a literary tradition, but novels and poems are written by no more than one or two people. Accordingly, authorship presumes that everyone makes an equal contribution to the piece. The International Committee of Medical Journal Editors guidelines on authorship, also known as the Vancouver guidelines (www.icmje.org) explicitly state that every author has equal responsibility for all material in the paper. That the new *Science* policies described by Alberts do not follow the Vancouver guidelines suggests that we need a new model for assigning credit to scientific projects.

Films might provide a better model for assigning credit than literature. Movie productions, like large scientific projects, represent the collaborative efforts of large teams, often working semi-independently of each other. The credits spell out who did what—director, cinematographer, screenwriter, and so on. There is no pretense that everyone who contributed to the film is an author of the film.

Honorary authorships are often given to principal investigators who provide resources, but minimal scientific input. Such investigators are analogous to film producers, who often set up financing and handle administration. It is appropriate that this important

work receives due credit, but that credit should not imply involvement in the creative process. Such contributions would probably not be recognized if the film industry were using, as science still does, the blunt instrument of authorship.

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Give the "Fair Sex" a Fair Shake

AS A LONGTIME READER OF *SCIENCE*, AND THE invited food speaker to the New York Academy of Science's series "Girls Night Out," I take exception to the idea that the choice of topics condescends to women ("Science for the fair sex," Random Samples, 18 December 2009, p. 1597). When I see the statement, "Guess girls are interested in science only if you can find a link to food, love, or makeup," I see the attitude—all too familiar to those of us whose work crosses into social science—that nothing but cell biology and genetics constitute real science. The statement suggests that work dealing with quotidian matters such as food, love, or even makeup cannot possibly be scientifically rigorous or interesting. I would argue instead that rigorous scientific thinking thoroughly informs my research on the influence of politics on agricultural production and consumption, particularly with respect to obesity and food safety. My lecture to the "girls" on 16 February will be much the same as the talks I give to mixed-gender audiences of researchers, university professors, health professionals, government officials, and business leaders. I am curious to know whether social scientists are as tired as I am of colleagues characterizing our work as insufficiently scientific to be taken seriously.

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Letters to the Editor

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