

The Public Face of Mathematics

I wish to encourage all AMS members to become active in promoting mathematics to the public. This can be accomplished in many ways: e.g., writing for a local newspaper about your favorite mathematics, organizing local mathematics festivals or competitions, helping local schools or clubs, or contacting your local congressional representative and offering your availability to try to answer any questions they may have pertaining to mathematics. These are just a few examples of ways to promote mathematics. No action is too insignificant. If you do not know where to begin, a discussion of how to effectively promote mathematics is starting to take place, and we hope AMS members can join in and contribute at any level (see more information below). Recent attacks in the news indicate that the perception of mathematics outside our community is increasingly negative and it is at risk of becoming politicized, with funding and support of mathematics at risk of suffering further.

Just in the past year you can read in popular magazines and newspapers that mathematics is not useful in the workplace (“Here’s How Little Math Americans Actually Use at Work, *The Atlantic*, April 24, 2013); that mathematics is likely not essential for scientific success and is responsible for the loss of many young scientists (“Great Scientist ≠ Good at Math”, *The Wall Street Journal*, April 5, 2013); that mathematics is an unnecessary ordeal, “an onerous stumbling block for all kinds of students” (“Is Algebra Necessary?”, *New York Times*, opinion published July 28, 2012). Especially disturbing is the recent official report of the President’s Council of Advisors on Science and Technology (PCAST E2E report, February 2012, <http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-engage-to-excel-final-feb.pdf>), which recommends “college mathematics teaching and curricula developed and taught by faculty from mathematics-intensive disciplines other than mathematics, including physics, engineering, and computer science;” i.e., university mathematicians cannot be trusted to teach their own subject. Thus, it is not the quality of the attacks received, but their quantity and frequency and the lack of a regular countervoice that are of concern.

You may say there is nothing to worry about, that these negative articles are passing opinions, and that the public and policymakers will not dare listen to or act on these propositions. You can also say that these negative attacks are not new and have no political agenda behind them. Nevertheless, there is evidence that public discourse about science can make a quick change for the worse. In the past decade we have seen an alarming decline in the acceptance of scientific evidence and the scientific method. Consider for example our current political debate about

climate change and global warming. Back in the late 1980s and early 1990s, conservative politicians like Reagan and Thatcher called for action to combat climate change, but today many politicians fear nothing of saying that “science is inconclusive” when in fact the majority of experts do agree we humans are affecting our environment.

Another example that underlines how mathematical topics can quickly run into politics and become the target of attacks or restriction is that of statistical methods that can be used to adjust or improve imperfect census counts. Politicians do not recognize them as valid and block their application, with the consequence that errors in the U.S. census persist despite existing ways to improve the accuracy of counts objectively. Can the actions of politicians and public opinion influence the situation we have now? I believe the answer is “yes”. For example, see how quickly politicians began pressuring universities to use online courses or the recent introduction of legislation that could change the grant review system at NSF (see, e.g., http://news.sciencemag.org/scienceinsider/HQRA13_001.xml.pdf).

Several mathematicians are already publishing positive articles about mathematics and responding to the attacks (to name a few: see, e.g., Bryna Kra’s article at <http://chronicle.com/article/Mathematics-1000-Years-Old/139943/>; the columns by Jordan Ellenberg and Ed Frenkel in *Slate*, http://www.slate.com/authors.jordan_ellenberg.html, http://www.slate.com/authors.edward_frenkel.html; or *The Huffington Post* columns by Jonathan Borwein and David H. Bailey, <http://www.huffingtonpost.com/david-h-bailey/>), but more needs to be done, and not everything has to be done through newspaper editorials. For example, there is a need to engage the public directly through mathematical events such as public lectures, demonstrations, or exhibits (some great examples include the public lectures sponsored by the mathematical institutes or the outreach to students and teachers done by math circles and math teachers’ circles).

In response to the need for more positive publicity of mathematics, there will be a panel, sponsored jointly by the AMS Committee on Education and the AMS Committee on Science Policy, to discuss effective ways to reach the public and policymakers. The panel, The Public Face of Mathematics, will take place at the upcoming Joint Mathematics Meetings in Baltimore, Friday, January 17, 2014, from 2:30 p.m. to 4:00 p.m. Please join the conversation. As Congressman Jerry McNerney wrote in the May 2013 *Notices*, “The community will not continue to innovate without a concerted effort to make sure that the field of mathematics remains a priority for institutions that support research.”

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DOI: <http://dx.doi.org/10.1090/noti1047>