largest being Hebrews (Jews from Eastern Europe), Bohemians, central Italians, and Sicilians. He compared parent-offspring resemblance in immigrants whose children were born in the United States with those whose children were born in Europe to see whether living in the New World had an effect on skull shape (see graphic).

Using the cephalic index—the ratio of head breadth to head length—Boas found what he saw as a small but significant trend: The U.S.-born children in the four largest groups were more different from their parents than were the foreign-born. Jews, who had "very round head[s]," became more "long-headed," he reported, while long-headed Italians became more short-headed—"so that both approach a uniform type in this country." The study is often cited as evidence that humans can't be pigeonholed in racial categories because their morphology is too malleable.

Rudimentary as his statistical methods may have been, "in general, we conclude that Boas got it right," say Clarence C. Gravlee of the University of Michigan, Ann Arbor, and colleagues in a paper posted online (www.aaanet.org/aa/105-1_gravleeetal.htm) months ahead of its publication in the *American Anthropologist*. The difference in the two groups of offspring, the authors state, is small but "highly significant."

Wrong, say Corey Sparks of Pennsylvania State University, University Park, and his adviser, Richard Jantz of the University of Tennessee, Knoxville. The divergence in the U.S.-born offspring is "negligible" and the influence of the environment "insignificant," they say in the 7 October *Proceedings of the National Academy of Sciences*. "Uncritical acceptance of [Boas's] findings has resulted in 90 years of misunderstanding about the magnitude of [cranial] plasticity."

Sparks doesn't disagree that Boas found a difference in cranial shape between foreign and domestic-born children. And Gravlee does not quibble with Sparks about the high heritability—and, hence, stability—of the trait. But the two sides disagree on whether the differences, although statistically significant, are also scientifically meaningful.

Sparks says that the differences pale when compared with the much greater variation seen among ethnic groups. "About 99% of the variation [among all the groups studied] is due to ethnic variation and 1% to immigration," Jantz explains. "Boas was right in identifying a small immigration effect," but that has been confirmed in many subsequent studies, he says. "The real value of Boas's work, as reinterpreted by us, is how small that environmental response is."

Graphic omitted per publisher
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Taking their measure. Two teams of researchers have reanalyzed data (*above*) from a classic study by Franz Boas of European immigrants in America—and come to contrasting conclusions.

Henry Harpending of the University of Utah, Salt Lake City, supports Sparks's analysis, arguing that "with samples this large, almost anything can become statistically significant even if it is not worth any attention."

Gravlee, however, insists that the numbers confirm Boas's "overarching conclusion," namely, that "the cephalic index is sensitive to environmental influences and therefore does not serve as a valid marker of racial phylogeny."

The practical impact of the two papers is not clear. Sparks thinks that his analysis will help those who want to use cranial data to study population history, because the Boas study "has been a burr in our bed for 90 years." Indeed, Jantz was a plaintiff in the long-running suit by scientists seek-

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ScienceScope

From Classroom to Boardroom President George W. Bush has belatedly nominated eight people for 6-year terms on the National Science Board, the National Science Foundation's governing body, and the list (www.nsf.gov/nsb) contains a few surprises. The biggest surprise is JoAnne Vasquez, who would be the first board member to have made her mark as an elementary school science teacher. Vasquez, now semiretired, is a popular speaker on school reform and a consultant for McGraw Hill Inc. Observers were also struck by the absence of any industrial leaders on the list, which is heavy with engineers and other academics.

The board has been short-handed since May, when a third of its 24 members rotated off. But the new members, nominated 17 October, can't step in until they are vetted and then approved by the Senate, which comes back this month for a short, lame-duck session.

Sea-Floor Science Silenced A federal magistrate has ordered the U.S. National Science Foundation (NSF) to cut short a research cruise off Mexico that was using sound to map the sea floor, backing conservationists who claim that the noise killed several whales (*Science*, 25 October, p. 722). This week's ruling disrupts a $1.6 million international project that was supposed to run through 4 November.

The Center for Biological Diversity (CBD), an Idyllwild, California–based environmental group, asked the court last week to halt the cruise after vacationing whale biologists discovered two dead beaked whales in the Gulf of California on 25 September. Environmentalists believe the deaths are linked to the use of sound-generating devices by the U.S. research vessel *Maurice Ewing*, which was mapping a nearby area. Human-created noise, including military sonar, has been linked to other beaked whale strandings. NSF said there was no clear link in this case, but it did halt the cruise for nearly a week and take steps to avoid whales. But that wasn't enough for the CBD, which successfully argued that the mappers didn't have the requisite U.S. permits—an interpretation disputed by NSF. Says agency spokesperson Curt Supplee: "This is a nightmare of legal ambiguity that will have to be hammered out by the courts."

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