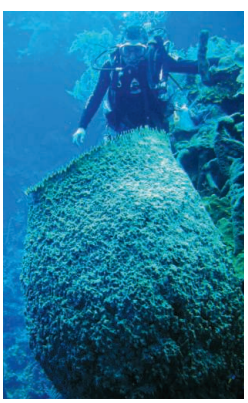
Easy as Pi

A French computer programmer has announced a new record for approximating π—this time on a desktop computer. Fabrice Bellard of Télécom Paris Tech took 103 days to compute 2.7 trillion digits and another 28 days to check the result. Bellard has thus toppled the previous record of 2.577 trillion digits, set last August by Daisuke Takahashi at the University of Tsukuba in Japan. That feat only took 29 hours. But, Bellard points out in a press release, previous modern π champs used multimillion-euro computers; his PC cost less than €2000.

Reefs of the Future

Giant barrel sponges, sometimes called "redwoods of the deep" because of their great size and age, are burgeoning on the reefs of the Florida Keys, scientists report. Sponges compete with corals, which have been dying from disease and environmental changes, says marine biologist Joseph Pawlik of the University of North Carolina, Wilmington, a co-author of a paper on sponge demographics appearing in next month's issue of *Ecology*. Unlike corals, sponges produce no calcium carbonate and are not affected by ocean acidification, he says: "That means [Caribbean] coral reefs are actually going to be sponge reefs in the future."



Bruegel's Statistical Signature

Beauty may be in the eye of the beholder, but a painting's authenticity may be encoded in patterns a computer can detect. To show that, mathematician Daniel Rockmore and colleagues at Dartmouth College applied a technique from neuroscience called sparse coding to analyze digitized gray-scale images of 16th century paintings by Pieter Bruegel the Elder and imitations of his work.

They fed tiny square patches of the images through an algorithm to modify and "train" a different set of squares that started out randomly shaded. The trained squares could then be superimposed on each other to reconstruct any patch from a painting. Crucially, the algorithm patterned the squares so that a few would suffice to reproduce a patch from a real Bruegel. If the team trained the patterns using any seven of eight real Bruegels, then, on average, the number needed to recreate a random patch from the eighth was smaller than the number needed to fit a patch from any of five fakes (with one exception). So the scheme distinguishes real Bruegels from fakes, the team reported last week online in the *Proceedings of the National Academy of Sciences*.

The technique would be "just one tool" to help determine a painting's authenticity, Rockmore cautions. James Coddington, chief conservator at the Museum of Modern Art in New York City, says its real utility may lie in comparing the works of one or several artists. "Ask the art historians—is it telling us something that we already knew, or is it giving us new food for thought?"

CREDITS (TOP TO BOTTOM): AP PHOTO; JOSEPH PAWLIK, UNC WILMINGTON; MET

ENGINEERS AND MUJAHIDEEN

The fact that Christmas Day would-be bomber Umar Farouk Abdulmutallab (whose "operation" is celebrated in the above poster) has a degree in mechanical engineering has drawn fresh attention to a controversial study linking engineers with terrorism.

In October 2007, sociologist Diego Gambetta of the University of Oxford and political scientist Steffen Hertog of Sciences Po in Paris caused a stir with "Engineers of Jihad," a paper that analyzed the known membership of extremist organizations since World War II. They concluded that right-wing groups and violent Islamist groups had attracted almost four times as many engineers as would be expected by chance. (Leftist groups, by contrast, were almost engineer-free.) The terrorists weren't recruiting engineers for their technical skills, Gambetta and Hertog concluded. Instead, they speculated, engineers' personal traits—such as preferences for clear-cut solutions to problems and tendencies toward political and religious conservatism—and poor employment prospects in much of the Middle East make them riper-than-average candidates for radicalization. The pair fleshed out their thesis in a paper in the August 2009 *European Journal of Sociology.*

Now the blogosphere is abuzz again, and Gambetta and Hertog say they are working on a book—amplified with new data that coalition forces have captured in Iraq. William Wulf, former president of the U.S. National Academy of Engineering, doesn't buy any of it. "The sample size is so small that … I just don't believe" their conclusion, he says. "This is really bad science." Terrorism expert Thomas Hegghammer of the Institute for Advanced Study in Princeton, New Jersey, disagrees. He says the authors "convincingly demonstrate" the disproportionate presence of engineers in jihad groups and commends them for breaking the "taboo" on studying "the role of innate cognitive features on political behavior."