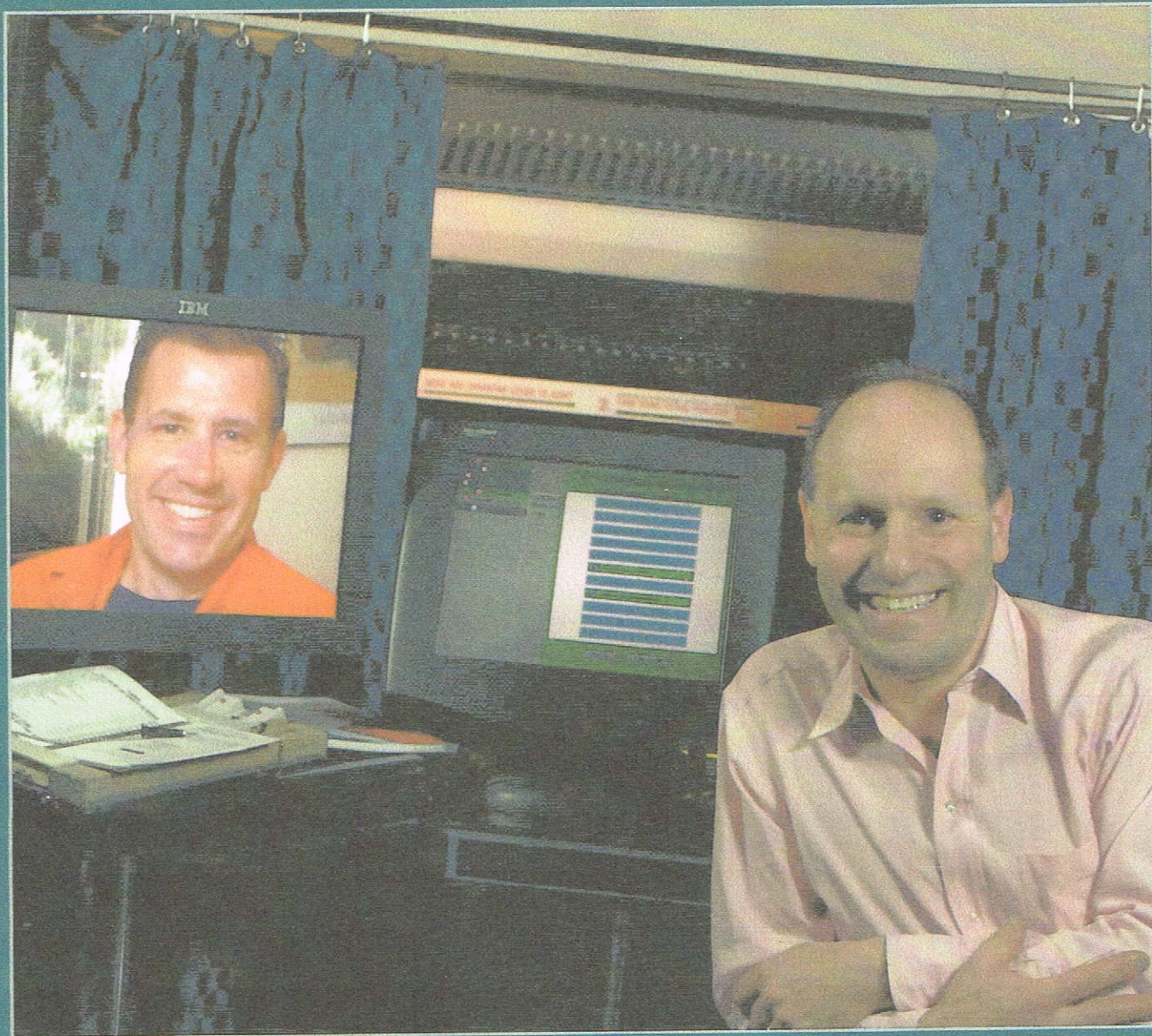# Ventures

The Voting Technology Project pairs the expertise of MIT's Ted Selker, at right in Cambridge, Mass., and Caltech's Michael Alvarez, on screen. A grant from Knight is helping the researchers develop more reliable voting technologies as well as policies to protect voters.

Battling for Voting Integrity, Coast to Coast

*Heading into the 2004 presidential election, Americans have justifiable reasons to worry about the integrity of their voting systems. Knight funded the Voting Technology Project at Caltech and MIT. **Adam Rogers**, a 2002-03 Knight Science Journalism Fellow at MIT, took a look and filed this report.*

At the annual meeting of the American Association for the Advancement of Science last February, Ted Selker, an MIT computer scientist and co-director of the Caltech/MIT Voting Technology Project, got a little riled up. He was talking about Direct Recording Electronic ballots, the ATM-like terminals many Americans will soon vote with. In the United States, these DREs cost about $3,000 each, and they don't work so well. "But somehow or other," said an exasperated Selker, "in Brazil, DREs cost $400 and have batteries that last 15 hours." In 2000, after decades of infamous electoral malfeasance, Brazil brought in 106 million votes from cities and from rain forests, on DREs. Only 0.2 percent didn't get transmitted.

The United States had substantially more trouble in its 2000 election. Maybe you heard about it.

The worst thing about the 2000 presidential balloting was the implication that every American election had been a little bit catastrophic – and nobody had ever noticed. That's where the Voting Technology Project (VTP) comes in. Until four years ago, only political scientists and local bureaucrats really cared about problems with collecting and counting votes. Today, the system's limitations are on full display, and so are some of the solutions, both short- and long-term.

According to Selker, David Baltimore, president of Caltech, realized in the shower one morning after the 2000 election that the country's two best-known technical universities might be able to make some sense of the voting thing. Now, four years later, VTP is one of the most far-ranging interdisciplinary collaborations in the country, comprising computer security experts, interface designers and political scientists.

What they've found so far goes way beyond a few miscounted chads. Sure, the voting systems – the ballots people actually vote with – have problems, like punch cards that don't punch or confusing designs. But polling places are often run poorly, by undertrained workers. And registration rolls remain as much as 20 percent incorrect. In 2000, Florida went to George W. Bush, ultimately based on a few hundred votes. According to VTP estimates, problems in the three categories they've isolated meant six million votes went uncounted nationwide.

The electronic terminals could be a solution, but they're still controversial. The federal Help America Vote Act, or HAVA, gives $3.9 billion to states and counties for new voting technology, and DREs probably will make counting smoother, says R. Michael Alvarez, a political scientist and VTP co-director at Caltech. Project researchers found that the electronic ballot terminals, in scattered use for the last few years, increase countable votes by about 5 percent. But the machines have a history of bugs, miscounts and errors – and no way to verify votes. As MIT's computer security legend Ron Rivest, a VTP member, says: "You try to take a typical Windows-based PC and propose that as a foundation on which to build a secure voting system, and most computer scientists have the reaction you'd expect."

So what can they do? Watch a lot of elections; Selker has observed hundreds. The VTP got the kind of punch cards used in Florida banned in most states. Alvarez works on SERVE, the Department of Defense's experiment in voting by Internet for Americans overseas; he plans to continue even though the Pentagon canceled the 2004 pilot project. VTP computer scientists are working on new voting systems and user interfaces (though Selker's favorite way to vote is a well-designed punch card set-up). The VTP has proposed new standards and technologies for electronic voting, and its leaders have issued a call for regular audits of election results. And Alvarez's team recently got access to the absentee voter database of Los Angeles County, the biggest, most diverse polling area in the country. He's crunching data to find out who votes absentee, and what happens to their ballots. No one's ever done it before.

Meanwhile, much of what went wrong in Florida in 2000 hasn't been fixed. And the kinds of reforms Alvarez and Selker advocate – streamlining polling places and ballots, fixing registration rolls – are getting politicized. "It generates uncertainty for all candidates if you change the rules of the game," says Alvarez. Campaigns spend their money based on ever-more precise polling, so elections get won on narrower margins, and the problems VTP studies get more visible.

But if the Brazilians can make it work, the United States ought at least to stand a chance.