

Election technology

More computer technology than information policy.

It's not a problem to write a program that accumulates button pushes. The problem is to be able to promise people that the counting was done correctly while still making it impossible to associate any specific vote with a particular voter.

Today, we mostly do this by trusting the companies that sell the voting machines.

Secrecy and software

A group of computer scientists (of whom the most familiar name to me is Avi Rubin of Johns Hopkins, because he once worked at Bellcore), believe that the safest way to assure everyone that the software inside voting machines does what it is supposed to do would be to make the software public.

The companies universally consider the code in their machines to be “trade secrets” and say that if they had to make it public hackers could figure out how to break into the machines.

Inspections

The voting machine companies hire software firms (SAIC is the best known) to look at the code and give assurances that it does what it should. These companies have to promise not to disclose the code, and even the full reports are not made public.

Nevertheless, a copy of the SAIC report on Diebold voting machines leaked and turned to disclose a number of vulnerabilities. See “Brad Blog” at globalresearch.ca

Some serious issues

Avi Rubin and his friends have found various ways to compromise some of the voting machines, either by changing hardware cards or by connecting them to networks.

A number of executives at voting machine companies have endorsed candidates. (One has actually run for office himself: Chuck Hagel was elected to the Senate in an election in which the votes were counted by machines built by a company which he used to head).

Comparison with casinos

The code inside slot machines has to be turned over to state gaming commissions, and is subject to spot inspections. Nevada keeps copies of all the code from the slot machines in their casinos, tests it, and compares the running code in the casinos to what they have on file. (And yes, they have caught people programming video poker games to return less money than they should).

The *New York Times* reasonably asked why gambling machines should be more open than voting machines.

A paper solution

Interestingly, the computer scientists who have looked at this problem generally agree on a solution: the “voter verifiable paper trail,” which means arranging that each voter sees a piece of paper which shows how the vote was counted, and which can be used in a recount.

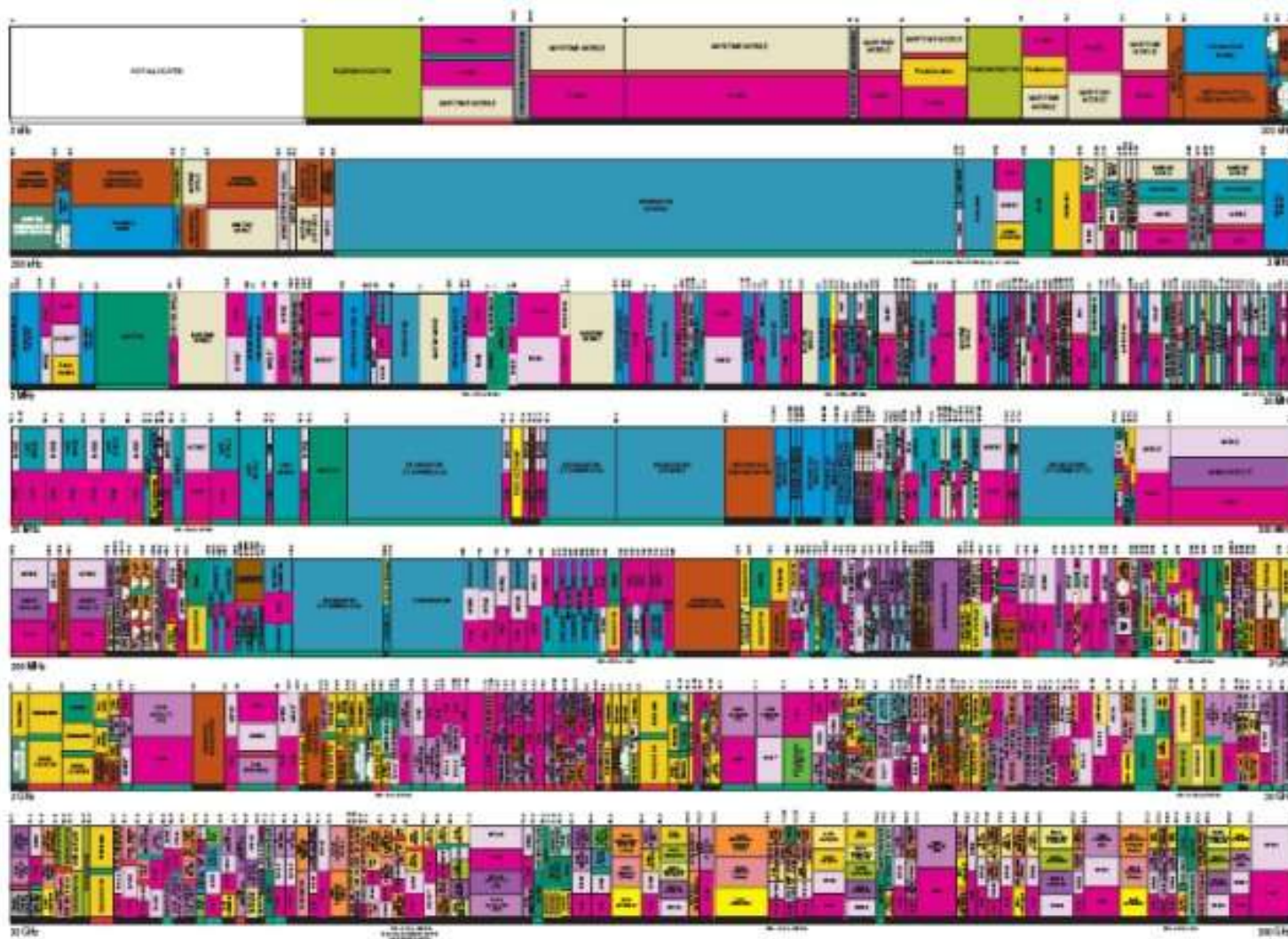
I hope that the only reason this is not being adopted is that the resulting machines would cost more (and more of them would be needed, as voting would be a little slower).

Wireless communications

Right now, the boom in communications is all wireless. The number of landline telephones in the United States is now shrinking; this had not happened since the Depression. The newest Apple laptops no longer have built-in dial-up modems.

Wireless communications requires radio spectrum. The FCC decides who gets it.

Spectrum allocation



<http://www.ntia.doc.gov/osmhome/allochrt.pdf>; I know this is illegible, there is no way this chart can be fit on one slide.

Many demands for spectrum

The largest chunks of spectrum are used by the Federal government and commercial broadcasters. The other users all tend to complain that these groups hog bandwidth. They all have their own stories. For example, the FAA points out that airplanes fly from country to country and so their radio frequencies must conform to world-wide standards. Many emergency agencies say they need bandwidth in reserve (who knows where the next forest fire or earthquake may happen?). Even the radio amateurs have a reasonable story about why they should have some bandwidth.

Sales + experiments

The pressure for bandwidth means that every so often the Federal government frees some up. The technologists would like these turned over to new ventures, which often now use the few “unregulated” bands (originally intended for things like microwave heating or welding) that are subject to interference and even jamming.

OMB likes to have them sold to the highest bidder. Some of these sales have failed; in the 1990s a number of cellphone companies overbid and could not pay.

Railroads and development

By Al Gore, *IEEE Computer*, Dec. 1994, page 43: “About 120 years ago two Colorado mayors had a big decision to make. One was the mayor of Aspen, the other, of Ashcroft. The railroads were expanding through the West, and the Union Pacific had to decide where to route its tracks through Colorado. Should they go through Ashcroft? Or should they go through that smaller town about 20 miles away? As the story goes, the mayor of Aspen saw the future. He sold the Union Pacific on the virtues of his town. And that's why today, when you think of ski resorts, dinner theatres, and vacation homes of the stars, you think of Aspen. Ashcroft? It's literally off the beaten track, now a ghost town.”

This particular story is nonsense – the Union Pacific went nowhere near Aspen when it was built and Ashcroft is almost inaccessible – but lots of similar ones are true (Syracuse, Phoenix).

Wireless and cities

Well, this is supposed to be your discussion. There are a variety of places that have tried to install networking as a way of improving economic growth, just as 19th century cities tried to get a railroad. This goes back before wireless; plenty of people pushed for better wired networking as a community-boost.

It's easy to show that countries with a lot of networking (Hong Kong, Japan) are richer than countries with very little (Rwanda). What is not so easy is to separate cause and effect.

That's the challenge. I don't know an answer.