

The Dawn of Do-It-Yourself Redistricting?

Online Software Puts Redistricting Tools in the Hands of the Public

By Micah Altman, Ph.D., and Michael P. McDonald, Ph.D.

“There is only one way to do reapportionment—feed into the computer all the factors except political registration.”

– Then-Governor Ronald Reagan quoted in the *Los Angeles Times*, Jan. 21, 1972

“With sophisticated computer programs, politicians can draw lines to maximize precisely their party’s representation and minimize the other’s. The result is sham legislative elections in which fewer and fewer seats are competitive and moderates of both parties get squeezed out of office.”

– *Washington Post* editorial, May 2, 2004

Arizona’s 2nd congressional district is one of the most bizarrely shaped in the country. It consists of a head-shaped chunk in the state’s eastern half attached by a long, thin neck the width of the Colorado River as it snakes for a hundred miles through the Grand Canyon to a body-shaped portion that hugs the state’s border with California. Indeed, for sheer formal chutzpah, it may just outdo the salamander-shaped 19th-century Massachusetts district drawn to benefit Governor Elbridge Gerry and dubbed a “gerrymander” by critics. Unlike most gerrymandered districts, though, the rationale for

the odd shape of Arizona's 2nd is not to protect an incumbent or to favor a particular party, but to separate members of the small Hopi Tribe from their longstanding, more numerous rivals in the surrounding Navajo Tribe.

The desire to protect the voice of communities is just one among a number of competing concerns that factor into drawing congressional districts. Federal rules require that districts have equal population and that they promote minority representation under certain circumstances as established by the Voting Rights Act. State requirements vary, but may include respecting community interests, as Arizona does; following existing political boundaries or geographic features; making districts as compact as possible; promoting fairness, by not favoring one political group or candidate over another; and fostering competition, which is usually achieved by creating districts that have a relatively equal number of partisans.

The authorities tasked with drawing congressional districts while balancing these concerns vary. In most states, state legislators draw districts, which are subject (in many cases) to gubernatorial approval. In a few instances, an advisory commission proposes maps for legislative consideration. A small number of states give all the authority to a commission, which may be composed of elected officials or their designees, or of citizens who have minimal connections with political leadership. Overshadowing all are the courts, which may review redistricting plans to ensure that they meet legal requirements.

Arizona is one of two states with a citizens' redistricting commission that requires commissioners to solicit public input. During the redistricting a decade ago, Chairman Wayne Taylor of the Hopi Tribe testified that "Our ability to create a bright future for Hopi hinges in part on our own strong representation in the political process unfettered by another countervailing interest that drowns [ours] out." The commission considered this and other testimony in carving Arizona up into congressional and state legislative districts with the aim of respecting the interests of all communities, as required by its constitutional mandate. One result was the oddly-shaped 2nd congressional district.

In other states, unlike Arizona, the public has little input into the redistricting process, and as a result district lines tend to favor political interests over the public interest. Perhaps the most infamous example in the past decade was the Texas re-redistricting saga. In 2003, Democratic state legislators dramatically fled the state in an unsuccessful attempt to thwart a Republican congressional gerrymander



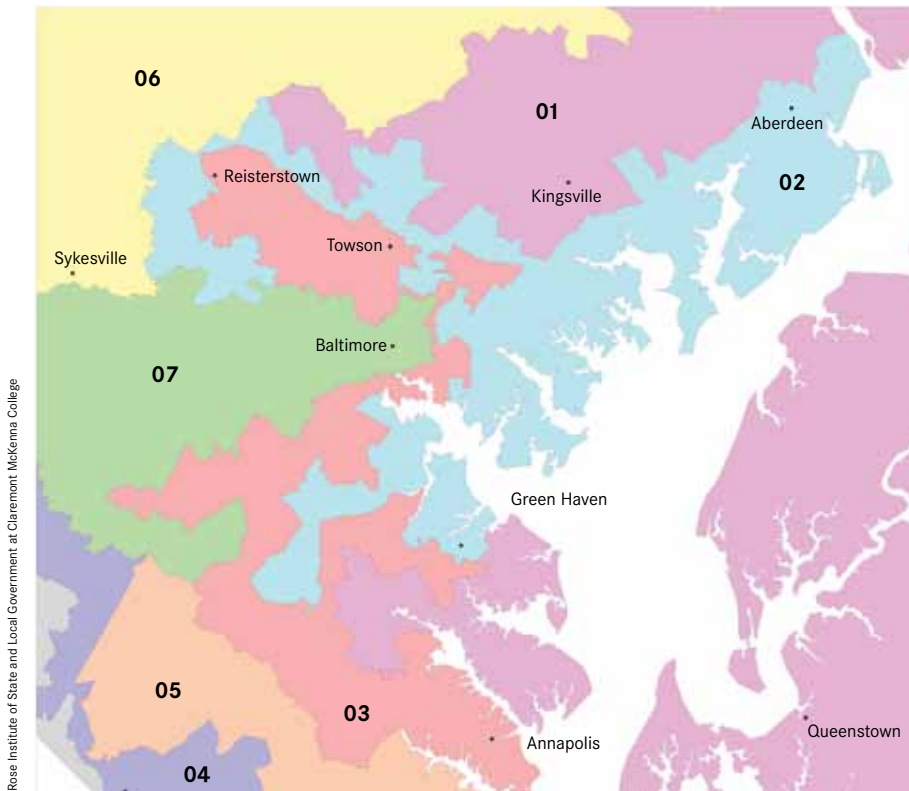
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Arizona's bizarrely shaped 2nd congressional district, which snakes for a hundred miles along the Colorado River, was designed to protect the interests of the small Hopi Tribe.

engineered by U.S. House Majority Leader Tom DeLay. DeLay was later convicted of Texas campaign finance violations committed with the aim of gaining control of the state legislature in order to implement the re-redistricting, which helped Republicans win an additional five congressional seats in the next election.

In California's last redistricting, the two parties colluded to draw districts that protected all incumbents. As a result, over the past turbulent decade of American elections, only one of the state's fifty-three congressional seats has changed hands between parties. The public's inability to produce change despite dramatic shifts in its voting patterns was a key argument for congressional redistricting reform, which has since been approved via state ballot initiative.

California now joins Arizona in establishing a citizens' commission tasked with soliciting public input. The idea is that public engagement in the redistricting process can help produce districts that better fulfill the representational needs of communities—and the round of redistricting beginning this year holds the potential for an unprecedented public role in this arcane process. Readily accessible computer software has advanced such that anyone with an interest can draw legal redistricting plans for their states and localities that they can then submit for consideration by redistricting authorities.



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Two of Maryland's eight congressional districts—the 2nd and the 3rd—regularly appear on lists of the most gerrymandered in the nation.

Computers: Redistricting Hero or Villain?

As the quotes at the beginning of this article suggest, computers have been cast as both potential heroes and villains of redistricting. One view sees them as capable of automatically drawing the fairest districts, while the other sees them as enhancing politicians' ability to draw districts rigged in their favor. Having been involved in redistricting for the last two decades as consultants, observers and scholarly analysts, we know firsthand that both the promise and peril of computers have been greatly exaggerated.

Our research—much of it conducted with colleague Karin Mac Donald—has shown that computers have enabled authorities to create redistricting plans more quickly and cheaply, but have not substantially affected plans' content. Contrary to the doomsayers, we have observed that computers produce modestly more compact and more politically competitive districts—perhaps because they enable politicians to gerrymander by creating districts with a more pleasing shape in a manner that wastes fewer votes. In short, computers don't gerrymander, people do. Politicians and consultants know perfectly well how to draw districts to their advantage without the help of a machine.

Those who have tried to use computers to produce fairer districts have likewise met with little success. Indeed, the first automated redistricting attempts in the 1960s produced spaghetti-like districts that failed the giggle test. Part

of the problem is that there is no consensus on what constitutes "fair" representation, or how to define "fair plans" sufficiently for evaluation by a computer program. Further complicating matters, it is often mathematically intractable to determine whether a computer has yielded an "optimal" plan, even when a criterion is easily measurable. For these reasons, practical automated redistricting software always builds in "heuristics," which are essentially educated guesses about how to draw plans—and these heuristics may implicitly favor some criteria over others.

Ultimately, computers can't do the hardest work of redistricting for us: balancing the competing concerns described above. An additional concern is that certain criteria that might appear to be neutral turn out to have significant political consequences. It is generally true, for example, that Democrats are

inefficiently concentrated in urban areas from a partisan gerrymandering standpoint. With this fact in mind, the Supreme Court has recognized that emphasizing compactness or respect for political boundaries may favor Republicans by wasting Democratic votes in uncompetitive urban districts.

Maximizing Public Participation

We believe that the best approach to redistricting is to maximize transparency by encouraging public participation and debate over what we as a society value in drawing districts. We also believe that the true promise of computers is to serve as a means to these ends, and that this promise has the potential to be fulfilled in the upcoming round of redistricting when, for the first time, redistricting software will be freely available to and easily usable by the public.

In the 1980s and 1990s, only state governments or political parties could afford the million-dollar-plus price tag of a redistricting system's components: high-end computers, a geographic information system and a combined database of census and political data. Some states made these systems available to the public, but they were typically located in a government building at the state capital, which deterred widespread public participation.

Twenty years ago, a computerized redistricting system cost more than a home and could only be operated by experts. Ten years ago, the software was about as cheap as a

used car and could be navigated by determined laypeople. Today these bars to public access are practically nonexistent. During the round of redistricting starting this year, the software will be freely available through Web browsers, and will be usable by non-experts with minimal training.

Technology may no longer pose a barrier to public participation in redistricting, but the legal questions surrounding it can be so complex that they pose a barrier in their own right. Anyone can draw a district; the trick is drawing one that satisfies all federal and state legal constraints. On that front, too, the bar has been lowered, with a number of online resources offering guidance. For instance, *A Citizen's Guide to Redistricting*, available from New York University Law School's Brennan Center, provides a comprehensive overview of each state's redistricting process and the applicable federal and state rules. Even more accessible is the documentary *Gerrymandering*, which introduces many of the issues around redistricting. Over half a million copies of the film were distributed to educate California voters about the state's recently passed redistricting reform, and a DVD will be widely available this spring.

Will the Public Participate?

So, anyone can engage in redistricting if they want to, but will they? Public opinion surveys routinely find that the public knows little about the redistricting process. (They often confuse legislative redistricting with school districting, which hits closer to home for many parents.) While we do not expect all Americans to spend their free time drawing districts—heck, many abstain from the far simpler and more basic act of voting—we do suspect that there exists a cadre of activists and students who will take the time to



California's 27th congressional district, highlighted above, was drawn to pull Latino voters out of the 28th district to its south.

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draw their own redistricting plans.

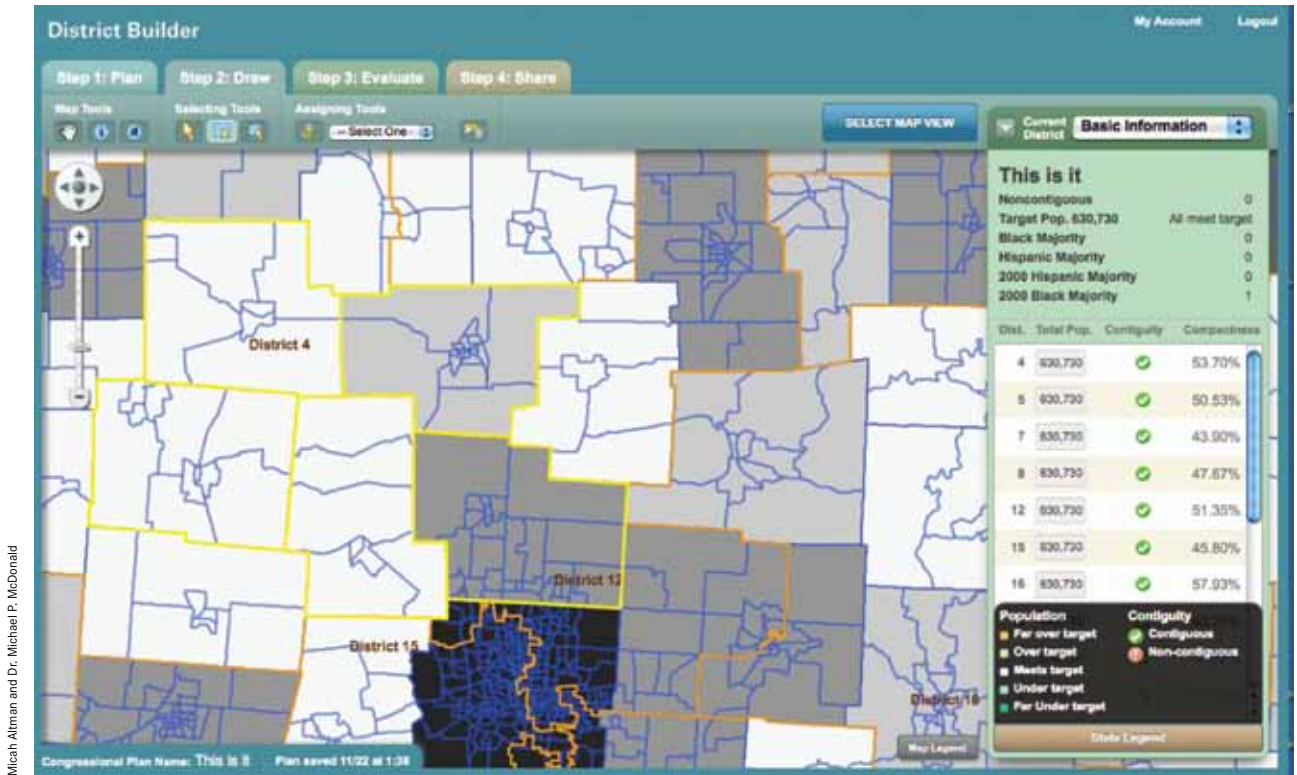
Our belief stems from a 2009 public competition in Ohio held by the secretary of state's office and reform advocates in which participants submitted congressional redistricting plans for the state. Even though the competing plans had no chance of being adopted, fourteen were submitted, of which eleven were deemed to satisfy legal requirements. From these, three winners were selected that included districts that met a laundry list of legal requirements: they had roughly equal population, met Voting Rights Act requirements, were sufficiently compact, respected political boundaries, were politically fair and would foster political competition. Significantly, all three winning plans equaled or surpassed the current Ohio congressional districts on all these criteria.

In the upcoming round of redistricting, we are aware of similar plans among reform advocates in a number of states. In Ohio and Virginia, advocates are planning to conduct redistricting competitions. In New York, advocates hope to convene a shadow commission to draw districts in parallel with the legislature's efforts. And, in many other states, advocates aim to open the process to anyone who wants to draw a map.

Collaborative mapping has the potential to fundamentally change redistricting. A state's redistricting authority—be it the legislature or a commission—can solicit public input to draw lines that are in communities' stated interests. And, if a member of the public creates a redistricting plan that exceeds a state redistricting authority's plan in meeting the legal requirements, the media and the courts may take a jaundiced view of the state's original plan.



An 1812 newspaper caricature of a salamander-shaped Massachusetts state Senate district drawn to benefit Governor Elbridge Gerry's Democratic-Republican Party and dubbed a "gerrymander" by critics.



Micha Altman and Dr. Michael P. McDonald

With the authors' open-source DistrictBuilder software, pictured here, users can draw their own districting plan and see how they are doing with numeric and visual feedback. Try it at www.publicmapping.org.


Plans for Participation

As discussed above, some states already have mechanisms in place to formally consider public plans during redistricting. We expect that Arizona and California's citizens' commissions will accept redistricting plans through public hearings. Even more innovative is Florida, where the state House is creating a Web-based mapping tool that will enable anyone to draw a plan and submit it to the state legislature with a few mouse clicks.

Although Florida's tool covers only one state, there are a number of other systems under development across the nation designed to foster participation in redistricting. In collaboration with the firm Azavea, we have developed the open-source DistrictBuilder software (available at www.publicmapping.org), which aims to enable anyone with a Web browser to easily produce a valid districting plan for the state of their choice.

As redistricting software becomes more widely available, one pitfall to look out for is "black box" gerrymandering, whereby computers are programmed to produce districts that are skewed in one way or another, either by design or error. To guard against this problem, our DistrictBuilder software follows principles for transparency in redistricting generated through discussion with redistricting experts and good government groups. We recommend that other

software projects follow these principles as well, which include making public the code or algorithms used to "score" districts; offering users the ability to obtain data and redistricting plans in non-proprietary, machine-analyzable formats; and clearly disclosing any organizations providing financial backing.

We hope that the experience of drawing their own redistricting plans offered to members of the public by software such as ours will provide a jumping-off point for a broader discussion of how to draw better districts. An important part of that discussion should be the tradeoffs between the competing concerns described above, such as the tensions between ideals of compactness and fairness and between meeting Voting Rights Act requirements and fostering competition. As more people grapple with these tradeoffs firsthand, public dialogue on how to approach redistricting will inevitably grow richer. 

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