

## Rethinking Redistricting

This year, as the U.S. Supreme Court tackles a slew of hot-button topics, its justices are receiving advice from two Caltech professors on an issue with huge implications for the nation's politics: partisan gerrymandering.

Morgan Kousser, the William R. Kenan, Jr., Professor of History and Social Science, along with Jonathan N. Katz, the Kay Sugahara Professor of Social Sciences and Statistics (both from the Division of the Humanities and Social Sciences), have helped prepare amicus curiae briefs in support of a group of voters from Wisconsin suing their state over an electoral map they say deprives them of their political voice.

That case stems from 2011, when Republicans redrew Wisconsin state-assembly districts in a manner alleged to keep Democrats out of power. In the 2012 election, Republicans gained 60 percent of the seats in the assembly while only receiving 49 percent of total votes cast.

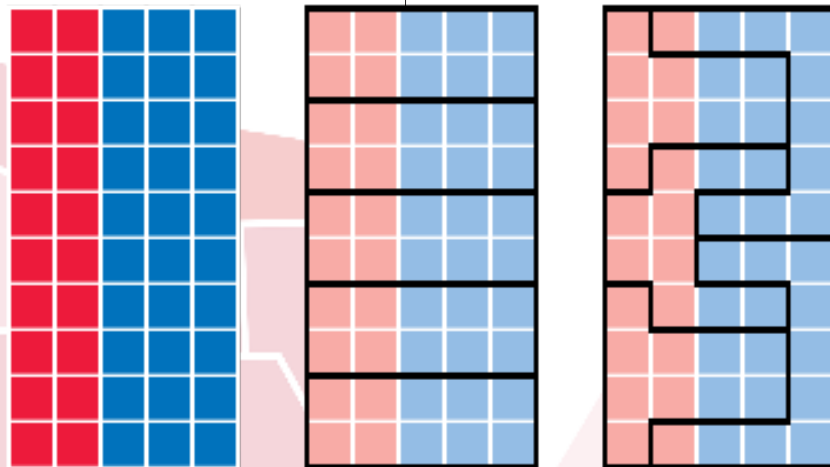
In response, 12 Democratic voters in the state filed a lawsuit seeking to have the Republican-drawn map declared unconstitutional. When the plaintiffs prevailed in district court, the state appealed to the Supreme Court, which agreed to take up the case. Oral arguments were held in October 2017 with a decision expected in 2018.

Though Kousser and Katz have sometimes found themselves on opposite sides of cases, they are in agreement on the negative effects of partisan gerrymandering, which is achieved by adjusting the boundaries of districts to gain desired electoral outcomes—such as diluting the voting power of a racial or ethnic group, protecting incumbents from losing their seats to challengers, or keeping one political party in power.

Advances in computing technology have made gerrymandering much more

effective, say Kousser and Katz. “They used to draw districts by hand using a slide rule,” Kousser says. “Now you can create 10,000 district plans with a computer.” Big data has also made it much easier for politicians to target which voters they want in a district, almost to the household level.

The last time a political gerrymandering case reached the Supreme Court, in 2004, a split court ruled against the voters, with swing voter Anthony Kennedy saying he believed partisan



gerrymandering is an issue the court should decide if someone could develop an objective way to measure it. This is where Katz and Kousser come in.

Kousser's brief lays out a case that gerrymandering in its modern form is a serious threat to democracy in the United States, and implores the court to step into an area where it has traditionally been reluctant.

“The argument we're making is that the historical precedent of the court deferring to state legislatures on these issues doesn't apply because the tools have changed,” Kousser says.

Katz's brief proposes the court use something called the partisan-symmetry test, which is the idea that a share of

total votes should result in the same number of legislative seats regardless of which party received them.

“Scientists are going to increasingly see issues they care about being litigated,” says Kousser. “Professors and intellectuals can get involved in shaping public policy through contributing to amicus briefs. It's a way for scientists to actually put their expertise to use shaping public policies.”

—Emily Velasco

### How gerrymandering works:

By adjusting the boundaries of electoral districts, political parties can gain votes and influence election outcomes dramatically. In this example, though the district is 60 percent blue, a redrawing of the boundaries results in the majority of the districts being controlled by red (far right).

Read more about the history and methods of gerrymandering at [magazine.caltech.edu/post/rethinking-redistricting](https://magazine.caltech.edu/post/rethinking-redistricting)

## CTLO Celebrates Five Years of Success

Created in 2012, the Center for Teaching, Learning, & Outreach (CTLO) was launched with ambitious goals: to improve the quality of teaching on campus, bolster instructional opportunities for students, and engage K–12 schools in educational outreach. At the time, Caltech lacked a center specifically devoted to those ends.

Timothy Liu, a senior in electrical engineering, says CTLO “has played a critical role in supporting and improving classroom instruction. Programs like TA training and cross-departmental discussions organized by CTLO have helped improve the classroom experience for students.”

Almost half of all faculty now participate in programs annually, says Cassandra Horii, who has served as director of CTLO since its inception, showing “Caltech's depth of commitment to discussing meaningful questions about how students learn.”

Xie Chen, associate professor of theoretical physics, is one of the program's participants. In January 2016, she sought help from CTLO to improve her Physics 129 b class.

“I was pretty new, and, after teaching the class once, I wanted to get my students more motivated and interested; I didn't want them to fall asleep,” she jokes. CTLO's assistant director for instructional practice and technology, Jennifer Weaver, sat in on a class and offered Chen specific tips for improvement, such as engaging students with questions and allowing them the time to consider and respond.



Chen credits the experience with boosting her confidence and improving her students' interest and attendance—and also, in part, for her receiving a graduate student teaching award for her winter 2016–17 course.

much from the classroom experience as the children did. “When kids are excited about what they're hearing, you can see it. Sometimes they can't keep it to themselves and start bouncing around. It's awesome to see that learning can have

**“I wanted to get my students more motivated and interested—I didn't want them to fall asleep.”**

that kind of effect on a kid,” she says.

Horii says that, going

CTLO's reach also extends into the community, where its programs cast students in the role of teachers as part of educational outreach efforts that engaged about 17,500 local K–12 students and teachers last year.

As part of the Science Night program, Celeste Labeledz (pictured above), a geophysics graduate student, led students at Field Elementary School in Pasadena in a water and dry ice demonstration of how comets form.

Labeledz says she gained at least as

forward, CTLO is aiming to deepen its collaboration with academic divisions and work to create more discipline-specific resources and programs: “We're really excited about partnerships that meet faculty and TAs where they are, and we're always looking for new ways to empower Caltech's community of educators.”

—Jon Nalick

For more on CTLO go to [magazine.caltech.edu/post/ctlo-celebrates-five-years](https://magazine.caltech.edu/post/ctlo-celebrates-five-years)