

To the Illinois Senate Redistricting Committee  
April 16, 2021

All redistricting must be led by someone with *at least* an M.A. in Geography. Mapmaking is called Cartography in academia, and is *entirely* under the aegis of Geography. Geography knows how to take into fair account all the factors which are legally required to be recognized, and also *all* the factors which require the districts to deviate from the perfect array of equal-sized hexagons found in a beehive. The geometric manifestation of success – compactness and contiguity - is districts whose perimeter lengths are clustered in the narrowest possible range.

We must also respect existing jurisdictional boundaries including counties, cities & villages, and unincorporated places recognized by the Census.

In Chicago, redistricting at all levels should use Community Areas to the extent possible.

Legislation about redistricting *must explicitly require* leadership by someone with at least an M.A. in Geography. "Bipartisan" and "independent" won't do this.

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Attached and included for the record:  
My testimony about ward remapping in Chicago, before City Council years ago (2/25/2014)



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## To the City of Chicago about Ward Boundary Remapping

I have a B.A. in Geography and 2 A's in Cartography. *I am qualified to comment about redistricting.*

If the data points are evenly distributed across a 2-dimensional space, and there were no restrictions on its outer boundary, the only fair ward map would have equal-sized hexagons. Beehive cells are hexagonal to minimize the use of wax. Political jurisdictions have to deviate from this, first, because most of the outer boundaries and natural interior boundaries (for example, streets) have right angles; second, because the people ("data points") are not evenly distributed. The logical starting point would be equal-sized squares rather than hexagons.

So Chicago can't have equal-sized wards of any shape. I really don't know how one starts to draw ward boundaries. The main goal should be to have the lengths of the ward perimeters clustered in the narrowest possible range. I don't know why The Voting Rights Act must try to keep certain minority groups clustered into wards together. I think that part of the law must have been passed to fight discrimination by gerrymandering. It would be a rare situation in which two map choices would differ *only* in whether a group of minority residents were put in one ward or the other. Mathematically, gerrymandering is characterized by the lengths of the ward or district perimeters having a much wider range than is possible if you're trying to minimize them.

People with more education in Geography and Cartography have written about redistricting. I refer you to their works:

Manninen, Diane Lynn, "The Role of Compactness in the Process of Redistricting." Master's Thesis, Department of Geography. Seattle: University of Washington, 1973.

Morrill, Richard L.; *Political Redistricting and Geographic Theory*. Washington D.C.: Association of American Geographers, 1981.

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