COMPACTNESS IN THE REDISTRICTING PROCESS

Where are the Dangers?
What is the Law?
What are its Measures?
How Useful are Its Measures?

Thomas B. Hofeller, Ph.D.
Redistricting Coordinator
Republican National Committee

Some Maps Courtesy of:
Kimball Brace
Election Data Services
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IN THE REDISTRICTING PROCESS:

NEVER TRAVEL WITHOUT COUNSEL

Michael Hess
Former RNC Chief Counsel
The First Gerrymander
Discussion embedded in US History

Before “One Person, One Vote”
- Counties or legislative districts were building blocks
- Many states had regularly shaped districts
HISTORY OF COMPACTNESS

- Discussion embedded in US History
- Before “One Person, One Vote”
  - Counties or legislative districts were building blocks
  - Many states had regularly shaped districts
- Baker v. Carr, et al lead to splitting of geography as population deviations were driven lower
  - Shapes became less important
What the Democrats Have Done Before

Illinois Congressional District – 2001
Here are some other great examples !
What the Democrats Have Done Before

Georgia Congressional District – 2001
What the Democrats Have Done Before

Texas Congressional Districts – 1991
What the Democrats Have Done Before
Arizona Congressional District – 2001
What the Democrats Have Done Before
Pennsylvania Congressional District – 2001
What the Democrats Have Done Before
Maryland Congressional District – 2001
Michigan Congressional Districts
Pre-Redistricting
Michigan Congressional Districts
Post-Redistricting
HISTORY OF COMPACTNESS

- The 1971 and 1981 Reapportionments used limited computer mapping for the first time
  - Pretty much limited to census tracts & “precincts”
- 1991 added significant geographic technology
  - Census Tiger Files
  - Geographic Information Systems (GIS)
  - Personal Computers (PC’s)
The “new” technology of the 90’s allowed:

- “On screen” mapping in color
- Display of data to block level
- More detailed data files
- Ability to run compactness tests
- Pinpoint political & demographic gerrymandering
COMPACTNESS & THE LAW

Let’s Look at Compactness as it’s used in the Law and how Courts view it.
Most states have generic language for compactness requirements:

- “districts shall be compact in form…”
- “districts shall consist of compact territory…”
- Some states, such as Iowa have specific tests
Development of Compactness in Federal Law
- No standards for CD’s until 1842
- Reapportionment Act of 1842 added requirement for single-member districts.
- Population equality added in 1872
- Compactness & contiguity added in 1901
- All but standard were dropped in 1929
- Single-member comes back in 1967
- Compactness comes back (racial/ethnic fairness) starting in the ’60’s
Compactness & the Law

- General compactness ignored by most courts even though many state constitutions contained compactness requirements.
- Compactness added indirectly in *Gomillion v. Lightfoot* (1960) City of Tuskegee, AL
Section 2 – *Gingles* Test

- A test to determine the need to create a majority-minority (equal opportunity) district
- [the minority population must be] “sufficiently large and geographically compact to constitute a *MAJORITY* in a single-member district”
- Politically cohesive
- Racial block voting must be present
- Additional tests (totality of circumstances)
Shaw v. Reno (North Carolina)

- 1993 Racial Malcompactness Case
- Justice O’Connor’s description of the 12th Congressional District as “bizarre”
- Also “we believe that reapportionment is one area in which appearances do matter”
Shaw v. Reno (North Carolina)

“One need not use Justice Stewart’s classic definition of obscenity – ‘I know it when I see it’ – as an ultimate standard for judging the constitutionality of a gerrymander to recognize that dramatically irregular shapes may have sufficient probative force to call for an explanation”
Other Admonitions

  - Presence of malcompactness NOT necessary to find racial gerrymandering (Kennedy, J.)

  - “Constitution does not mandate regularity of district shape” [see *Shaw I*]
Where does this leave us?

- It is extremely unlikely that a Court will ever judicially adopt its own mathematical measure of compactness.
- However, a mathematical compactness measure can have TWO possible court uses.
Where does this leave us?

**TWO POSSIBLE COURT USES:**
- Evidence that validates that a specific district is far less compact than other districts in the jurisdiction
- As a specific legislatively adopted test in a jurisdiction
Where does this leave us?

- So . . . . We’re back to the famous Grofman “interocular test”
- AND
- Be careful of the compactness standards you adopt. They may come back to bite you on the rear in court.
Where does Compactness Fit?

- List of possible criteria:
  - Single versus Multi-member districts
  - Population Equality
  - Voting Rights Act Compliance
  - Compactness and Contiguity
  - Preservation of Political Boundaries
  - Communities of Interest
  - Partisan and Incumbent Interests

- Obviously, these Criteria may conflict with one another
LOOKING AT COMPACTNESS

- One can consider two types of compactness
- Geographic compactness – What is the SHAPE of the district(s) in question?
- Racial Compactness – The nature of the degree of racial/ethnic compactness within a district.
- There might be one without the other.
LOOKING AT COMPACTNESS

- As usual scholars take different viewpoints and argue the topic in endless papers.
- Some believe Compactness is outdated and irrelevant.
- Some believe that it’s biased against certain political parties and minorities.
- Some believe Compactness is the prime defense against gerrymandering.
LOOKING AT COMPACTNESS

- Is it the distribution of VOTERS or LAND that is the most important consideration?
  - Is gerrymandering totally defined by geographic shape?
  - Can one gerrymander with compact districts?
TYPES OF COMPACTNESS

- Dispersion Measures
  - How tightly packed or spread out is a district?

- Perimeter Measures
  - Comparing boundary length to other districts or other plans

- Population Measures
  - Where are the people located within districts?
DISPERSION MEASURES

- **Width vs. Length**
  - Compares length of longest axis to maximum width of district perpendicular to the axis.
  - Advantage is Simplicity
  - Too dependent on extreme points
  - Gives high scores to unnatural figures such as a tightly coiled snake
DISPERSION MEASURES

- **Area Measures**
  - Compares district area with areas of other compact figures (Circles, Ovals, Compact Hulls)
  - Advantage is Simplicity
  - Misses meandering districts (coiled snake)
  - Misses indentations
Area Measures (cont.)

- Common Measure is called the CIRCUMSCRIBING CIRCLE (Reock Test)
- Ratio of Area of District to the Area of the SMALLEST Circle that can be drawn around the district
Minimum Circumscribing Circle
Minimum Convex Figure Containing District Rubber-Band
DISPERSION MEASURES

- **Moment of Inertia**
  - Measures distance from center of gravity (or areal center) to points in district boundary (Schwartzberg)
  - Too Complex
  - Misses indentations
  - Dependent on Scale
DISPERSION MEASURES

- All may give bad scores to stretched out districts that may have quite regular boundaries and be perfectly justified.
- Can miss irregular shapes in urban areas if combined with much larger rural areas.
PERIMETER MEASURES

- **Sum of Perimeters**
  - Compares one plan to another
  - Plan with shortest perimeter wins
  - All must use same boundary file
  - Simple
  - Allows gerrymanders of urban areas
  - Dependent on Scale
PERIMETER MEASURES

- Comparison of District Perimeter to Perimeters of Other Compact Figures

- Most Common – PERIMETER CIRCLE
  - Ratio of district area to area of circle with same perimeter
  - Just think of district being filled with air until it expands to be a circle.
Perimeter --
Length of boundary stretched to a circle
Perimeter Circle (Continued)
- Finds “Squiggles”
- Simple to understand
- Penalizes coastlines, rivers & mountain range boundaries (particularly county & state boundaries).
- Misses single protrusions
- Ignores where people are located
PERIMETER MEASURES

- **Sum of Perimeters**
  - Compares one plan to another
  - Plan with shortest perimeter wins
  - All must use same boundary file
  - Simple
  - Allows gerrymanders of urban areas
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POPULATION MEASURES

- Based on People – where do they live in comparison to others within and outside the district.

- Two common measures:
  - District population compared with population of compact figure
  - Moment of Inertia
POPULATION MEASURES

- “Rubber Band"
- Ratio of Population within District to Population of Convex Hull drawn around District. “Rubber Band” (Grofman-Hofeller)
  - Measures people bypassed to include other distant people
  - Not subject to scale
  - Complex (difficult to explain to Judges)
“Rubber Band” (Continued)

- Is now not difficult to compute

- Usually involves census blocks – their centroids and populations

- Can over exaggerate effects of extreme points of vacant geography if unadjusted
POPULATION MEASURES

- **Moment of Inertia**
- Measures distance of centroids of population units from center of district weighted by those points’ populations
  - Complex to use
  - Difficult to understand
  - Conflicts with notions of spatial compactness and may be difficult to justify.
Scholars’ Views

Use of Mathematical Compactness Tests

“There is no score for any one [compactness] measure … that on the face of it indicates unsatisfactory compactness…”

“Characteristics of the area being districted made identification of such levels impossible.”

Richard Niemi, et al
Journal of Politics (1990)
Scholars’ Views

Comparisons of Compactness between States

“Comparisons [using compactness measures] should be limited to the state or jurisdiction being districted.”

“Because of different initial shapes, along with rivers, coasts, and other natural boundaries, [different states’ districts] are unlikely to achieve comparable degrees of compactness.”

Richard Niemi, et al
Journal of Politics (1990)
Scholars’ Views
Of Trying to Achieve Compactness

“A district pattern of symmetrical squares, although conceivable, well can operate to submerge a significant element of the electorate …”

“As a practical matter, absolute compactness (districts forming perfect circles that are even shorter lines than squares) is an impossibility.”

“Rigid adherence to a compactness, however phrased, should be avoided.”

Robert G. Dixon, Jr.
Political Scientist (1982)
IN SUMMARY

Compactness Measures are:

- All extremely interesting (especially to academics)
- All produce varied (and often conflicting) results
- Unlikely to be adopted by courts (specific models)
- Leave us with the “know it when you see it” standard
Compactness Measures (cont.):
- Only cause trouble in racial gerrymandering unless a very specific state test is mandated
- Still allow plenty of room for political and racial gerrymandering
- Are one of the Expert Witnesses’ best friends
- Should, nonetheless, be included in viable software packages
- Deserve yet another round through the academic grist mill during the this decade
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