**Fracking: A Contiguity-Related Redistricting Metric\***

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The aim of this short blog is to add a useful term, *fracking*, to the list of geographically defined redistricting criteria. *Fracking* is defined as a situation in which a county or city or other well-established political subunit is found in two or more discontiguous pieces within the same legislative or congressional district.[[1]](#endnote-2) This criterion has been identified by some courts and legislatures but had never been given a name. For example, in *Common Cause v. Rucho* No. 1:16-CV-1026 (U.S. District Court, Middle District of North Carolina, 2018, slip op at p. 105 [p. 194]) the North Carolina legislature is quoted as asserting that one of the districting criteria that it implicitly relied upon was that “a district line should not traverse a county line more than once.”

This criterion was first labeled “fracking” by Bernard Grofman in his special master report in the *Bethune-Hill* racial gerrymandering case.[[2]](#endnote-3) *Fracking* can be used as a gerrymandering tool, with fracking that involves pieces whose racial or partisan composition differs from that of the geographic area between the fracks. The name was chosen to resonate with other terms in the redistricting literature that have been applied in the gerrymandering context: namely, *cracking, stacking*, and *packing*.[[3]](#endnote-4) As the earlier quote from the North Carolina legislature indicates, *fracking* is a feature of maps that is regarded as undesirable. At best *fracking* indicates sloppy redistricting practices, since (a) there is never a need for *fracking* to satisfy population constraints; and (b) *fracking* limits the extent to which the boundaries of a district can be easily described, i.e., if affects what Grofman (1993) referred to as the “cognizability” of constituency boundaries.[[4]](#endnote-5) And (c) avoiding *fracking* also has the practical benefit of making election administration simpler by limiting the number of different ballots offered in geographical proximate areas.[[5]](#endnote-6) Moreover, (d) the presence of fracking suggests the possibility of intentional racial or partisan gerrymandering.

In addition, (e) *fracking* may also directly violate provisions of state constitutions that require contiguous communities of interest to remain intact to the greatest extent feasible, especially when political subdivision boundaries may themselves be regarded as defining an important community of interest (Wang et al. 2019, p. 244; Wang et al. 2022). In some state constitutions or legislative bills maintaining political subunits boundaries intact to the greatest extent feasible may be given a very high priority. (Wang et al. 2019, p. 242). But in any case, it is generally considered good redistricting practice to keep existing political subdivisions as wholly contained in individual districts as possible given the relative sizes of the district and the political subunit populations. In particular, non-fragmentation of existing political subunits is found in any list of traditional good government criteria along with constitutional standards such as population equality or equal protection under the 14th Amendment and geographic features of plans such as *contiguity* and *compactness* (Grofman, 1985; NCSL 2020).[[6]](#endnote-7)

One common way to measure compliance with the criterion of non-fragmentation of political subunits, say counties, is to count the number of counties that have population found in more than one district. The other way is to count the number of times each jurisdiction is split, i.e., the number of separate pieces into which the jurisdiction is divided. In the first counting method, a county can have portions of itself found in a dozen different districts but have this counted as only one county split. Under the second method, this wholesale splitting of the county would be counted as twelve splits. We regard both methods as informative, but we regard the second method as providing far more complete information.[[7]](#endnote-8) *Fracking* can be viewed as a special case of fragmentation of political subunit boundaries, one that also involves the violation of contiguity of district populations. In other words, when we have *frackin*g, then there will be two or more pieces of a given county in the district, and thus those pieces will be discontiguous with each other. [[8]](#endnote-9)

## Example of fracking. In *Golden Bethune-Hill v. Virginia State Board of Elections (Civil Action No. 3:14-cv-852, 2015)*, a three-judge district court found eleven districts of the state’s lower legislative chamber to be unconstitutional under the Supreme Court guidelines laid down in *Shaw v. Reno* 509 U.S. 630 (1993).*[[9]](#endnote-10)* The latter decision prohibited the use of race as a preponderant motive in redistricting.[[10]](#endnote-11) Four of the eleven districts found to be unconstitutional in the Virginia House of Delegates 2011 Enacted Map contained instances of *fracking* (districts 63, 70, 90, and 95). Below we show the *fracking* in District 63 (Figure 1)

<< **Figure 1 about here** >>

The example of the fracking of Hopewell city in Figure 1is one that appears to be racially motivated. There are two discontiguous pieces of Hopewell City placed by the 2011 Enacted map in district 63. One piece has a total population of 6,519, of which 66% of it is Black voting age population (BVAP). The other piece in District 63 that is also within Hopewell city has 857 people, with 72% BVAP. The BVAP in the combined two pieces is 66.8%. In contrast, the piece of Hopewell city placed in District 62 that lies

between the two fracked areas has 2,085 people, with a 26% BVAP. In other words, splitting the district into multiple pieces within the county worked to single out the more heavily black areas for inclusion in District 63, with the in-between less Black area was placed into District 62.

But racial gerrymandering might not be the only explanation for the presence of a “fracked” city or county. Sometimes, for example, it might be done to avoid the home of an incumbent and avoid a pairing of incumbents. But, in general, without legally compelling reasons, mapmakers ought not to frack.

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| **FIGURE 1. Example of the Fracked City of Hopewell in Virginia, State House of Delegates Enacted plan (2011)** |
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| Note: The red area is district 63. The two non-contiguous areas inside the boundary of Hopewell City are the fracked areas. |

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1. ENDNOTES

   Communities of interest may also be cracked if parts of the community can be found in the same district but the community is divided into multiple discontiguous pieces. [↑](#endnote-ref-2)
2. Report of the Special Master in *Golden Bethune-Hill v. Virginia State Board of Elections*, Civil Action No. 3:14cv852 (January 17, 2019). [↑](#endnote-ref-3)
3. *Fracking* also reflects the idea that the effects of geological fracking can create fissures in the earth. [↑](#endnote-ref-4)
4. *Cognizability* of districts can have important consequences for voters in terms of incentives to participate (Winburn and Wagner, 2010; Wang et al, 2022 forthcoming), but also for candidates in terms of focusing campaign efforts. [↑](#endnote-ref-5)
5. Voters who receive incorrect ballots can lead to additional problems. Laura Vozzella and Ted Mellnik. “Va. election officials assigned 26 voters to the wrong district. It might’ve cost Democrats a pivotal race.” May 13, 2018. *Washington Post*. <https://www.washingtonpost.com/local/virginia-politics/voters-assigned-to-wrong-districts-may-have-cost-democrats-in-pivotal-virginia-race/2018/05/13/09a9dd8a-5465-11e8-a551-5b648abe29ef_story.html> [↑](#endnote-ref-6)
6. Non-fragmentation of communities of interest is also commonly found in this list (See Wang et al., 2022 forthcoming). [↑](#endnote-ref-7)
7. In evaluating the number of splits generated by either method, attention must be paid to the number of splits that would be forced by population considerations, since some jurisdictions may have population that exceeds what can be contained in a single district. [↑](#endnote-ref-8)
8. Note: Currently, only *Maptitude for Redistricting* has an explicit option for identifying instances of *fracking*. Tests for fracking, however, can be programmed in any software, and, as the present authors did in Virginia, examples can be identified via visual inspection of plans. [↑](#endnote-ref-9)
9. The court ordered a Special Master to draw remedial maps (*Bethune-Hill v. Virginia State Bd. of Elections*, 580 U. S. \_\_\_ (2017). The court action was upheld by the U.S. Supreme Court (*Virginia House of Delegates v. Bethune-Hill*, 587 U.S. \_\_\_, 2019), with the ruling based on a procedural issue having to do with standing to bring the lawsuit **.** [↑](#endnote-ref-10)
10. U.S. Supreme Court standards for a *Shaw* test were further elaborated in *Alabama Black Legislative Caucus v. Alabama,* 135 S. Ct. 1257 (2015). [↑](#endnote-ref-11)