RESPONSE TO EDITOR

We found the comments of Reviewer 3 to be quite helpful since, while congratulating us on the improved organization, the reviewer’s comments also highlighted areas of the paper which lacked clarity. We will address each of these comments by briefly expanding our discussion -- adding a footnote to clear up possible confusion and adding a few additional references where appropriate. We believe that we have fully responded to all the reviewer suggestions.

1. One source of confusion is about where to set the threshold between politics and usual and unconstitutional partisan gerrymandering. As the reviewer wrote “Every plan splits partisan concentrations. When is such partisan cracking too much?”

To respond , we have added a footnote that says:

FOOTNOTE In any legal judgment where there are one or more continua along which alternatives can be arrayed, courts must confront the classic problem of *sorites*, i.e., how to partition things into categories, such as constitutional and unconstitutional. As is argued in Grofman and Gaddie (2017), expanding upon a helpful suggestion by Rachel Apter, courts almost never have to make this choice in voting rights cases of first impression, since such cases involve what Grofman (in earlier unpublished work) referred to as “horribles.” Horribles have case facts so extreme that it is easy to decide that they are unconstitutional without ever having to be precise about where the line ultimately is to get drawn. We regard the Pennsylvania congressional districting plan that was overturned as such a “horrible.” What we have seen in other voting rights areas such as “one person, one vote” is that it may take multiple decades before courts settle on a “bright line” test, often converging on such a test from both sides. Of course, such a bright line test is often inherently arbitrary, but, when the standard is a reasonable one, that arbitrariness is outweighed by the usefulness of having those litigating cases and those who seek to avoid their decisions being challenged able to know in advance (or at least have great confidence about) how courts will decide cases because the meaning of precedent can be more precisely specified (see also Grofman,1992) . However, we would also acknowledge that there could be considerable difficulty in converting the standards enunciated by the Pennsylvania Supreme Court into a bright line test since, if the test were to be limited to only the consideration of violations of good government standards, that will generate a virtual certainty that *stealth partisan gerrymanders*, will fly under state court radar screens.

1. The reviewer also suggested the possibility of cycling, in which a remedial plan that increased concentration of a group that was found to have its voting strength cracked was then challenged by the other group as having had the consequences of diluting its voting strength. The reviewer wrote “If one claimed Republicans were being cracked in a state plan and a court ordered a redraw to increase concentrations of Republican voters, what would then keep Democrats from arguing they were being cracked in such a remedial plan? It would seem to be an endless cycle.”

Here, too we have added a clarifying footnote:

FOOTNOTE It might seem as if a plan challenged by one side as diluting its voting strength would, if the gerrymandering were remedied, then lead invariably to a challenge by the other side to the remedial plan as simply a partisan gerrymander in the reverse direction. And we do expect that such challenges would be made, but we also expect that most would be found to be frivolous, and some never get to the courts simply because of the high cost of bringing this kind of litigation. Also, given court deference to the other branches of government, we expect that most remedial plans would be drawn by the legislature itself (except where the state has shifted from unified to divided party control after the original line drawing, as was the case in Pennsylvania).

1. A third lack of clarity in the paper was about the degree to which the paper had a normative stance and if so, what it was. The reviewer asserted that: “There is a normative bent to this article that seems to be attempting to prop up the Pennsylvania State Supreme Court’s justiﬁcation for its decision.”

Here we have added a footnote

FOOTNOTE: We make a distinction between that which belongs to the realm of constitutional and statutory interpretation of voting rights issues that is the ultimate purview of the courts, and the measurement contributions to be made by social scientists to that legal decision-making, e.g., about how best to measure concepts such as *compactness* or *racially polarized voting*. The view taken by the Pennsylvania Supreme Court about what, under Pennsylvania state law, constitutes evidence for a partisan gerrymander is a legal judgment. Writing as a social scientist, one of us had offered a quite different perspective on how best to define and measure a partisan gerrymander (Grofman, 2018, Grofman and Gaddie, 2017, 2018). And, in the light of the Supreme Court’s decision in *Gill v. Whitford,* we think it quite likely that legal and social science perspectives on federal standards for partisan gerrymandering will diverge, with the former emphasizing district-specific findings and the latter emphasizing jurisdiction-wide findings --though we also see the potential for a Hegelian synthesis in which, for example, we might look at state wide violations for which there are district-specific remedies.

1. A fourth issue is the need to say more about the proportionality issue. In particular, the reviewer wrote: “Some mention of the fact that many of the measures for entire plans (eﬃciency gap) are highly correlated with proportional representation in partisan terms should be acknowledged as well.”

To deal with these issues we have added a footnote:

FOOTNOTE It is easy to see that drawing good government lines that do not seek to compensate for biases imposed by electoral geography, with its potential for so‐called “natural gerrymandering,” is far from imposing a requirement for proportionality, but even districting that does seek to impose such a correction while still satisfying good government criteria, when done by a court, is almost certainly going to be limited in scope and unlikely to result in proportional representation since, as many authors have long pointed out, single member districts tend to disadvantage the minority party relative to its share of the vote (see e.g., Grofman, 1982). Also, as noted above, while it might seem that the eﬃciency gap standard involves a requirement for proportionality, if we take *proportionality* to be defined as “a votes-seats slope coefficient of one, with zero bias (i.e., the equivalent of a zero intercept),” then the *efficiency gap* should not be seen as requiring proportionality, but rather be viewed as an attempt to restrict the scope of gerrymandering disproportionality by imposing a requirement that the slope of the votes-seats curve should not be much greater than 2. As discussed in Grofman and King (2007), *symmetry* and *proportionality* are distinct concepts, even though a votes-seats slope of one with zero bias is both proportional and symmetric.

1. The reviewer correctly notes that we need to update the reference to the North Carolina congressional cases.

TO DO SO WE ARE REPLACING

<As of this writing (July 8, 2018), these cases have not yet resulted in new lower court rulings, and the U.S. Supreme Court has thus yet to utter the ﬁnal word regarding federal standards for unconstitutional partisan gerrymandering.>

WITH

As of this writing (August, 2018), only one of these cases has yet resulted in a new lower court ruling , and that case, from North Carolina, has yet to result in a definitive ruling from the trial court as to the next steps necessary to remedy the violation found. And, of course, that ruling in turn would almost certainly result in further Supreme Court review. So we are still in a situation in which the U.S. Supreme Court has yet to utter anything like the ﬁnal word regarding federal standards for unconstitutional

1. The typos on pp. 18, 23, AND 34 that the reviewer called our attention to have now been fixed.