RANDOMIZATION IN DEMOCRATIC DESIGN: APPLICATIONS TO MODERN REDISTRICTING

- *Bruce E Cain**

I. INTRODUCTION

While lottery government was an important feature in some of the earliest democracies, it has until recently played a relatively minor role in modern democratic design. Sortition in the Athenian state served to limit the influence of wealth, connections and power over government officials.[1] By comparison, modern democracies have preferred to counter outside influence and special interests with civil service reform, stricter conflict of interest laws, transparency requirements and more frequent elections.[2] This modern effort to limit unwanted special interest influences has only been partially successful, especially in the US. In an effort to find additional ways to limit outside influence on public officials and to promote more deliberation in public affairs, some observers and reform leaders have rediscovered and revived sortition as a solution to contemporary democracy problems. [3]

One example of this is in the area of redistricting reform. Political systems that use district based as opposed to at large elections for selecting representatives must redraw their legislative boundaries periodically to conform to the principle of "one person, one vote" equality. The ostensibly technical task of equalizing district populations is inevitably fraught with political tensions of various types, especially when incumbents and party leaders have the power and responsibility to devise and vote on their own district lines. When a single party controls the line-drawing process, it often results in a plan that favors it over the opposition. When neither party is in complete

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[1] Owen Dowlen, *Sorting Out Sortition: A Perspective on the Random Selection of Political Officers*, 57 (2) POLITICAL STUDIES 298–315 (2009)
[2] BRUCE E. CAIN, DEMOCRACY MORE OR LESS (Cambridge, 2015)
[3] Michael Schulson, *Is it Time to Take a Chance on Random Representatives?*, THE DAILY BEAST (Nov. 8, 2014), https://www.thedailybeast.com/is-it-time-to-take-a-chance-on-random-representatives.

control, the compromise solution is frequently one that diminishes electoral accountability and responsiveness by making all or most incumbents safer.

Initial redistricting reform efforts turned to the courts for relief, hoping that judges would adopt fairness standards that could prevent partisan and incumbent gerrymandering.[4] After numerous attempts, the Court, however, was unable to settle on a manageable standard of political fairness, concluding only that our single member, simple plurality method of electing legislators does not imply the proportional representation standard associated with parliamentary systems. [5]

In reaction to the so far futile search for a legal remedy, some states have adopted an institutional solution instead—Independent Redistricting Commissions (IRCs) that in theory would have the capacity and incentive to draw lines without external political control and influence. Several of these IRCs proposals incorporate lottery selection into their design for appointing commissioners in the hope of insulating the IRC members from incumbent and party leader interference. This application of sortition is entirely consistent with its original purpose in early democratic design, but does it adequately address the complexity of achieving autonomous impartiality in the context of modern politics?

Secondly, is sortition the only lottery tool that we can use to fix this problem, or are there other ways with which randomization can improve the redistricting process? I will argue that innovations in computer algorithms have opened up the prospect of using randomization to contextualize choices and protect the courts from potential partisan taint when they are given the line-drawing task due to the stalemate in the political redistricting authority.

II. BOUNDED SORTITION & REDISTRICTING COMMISSIONS

Several recent redistricting reforms use lotteries to select the members of Independent Redistricting Commissions. Random selection is meant to give an additional layer of protection against incumbent and party leader influence. The history of redistricting commissions traces a path of increasing separation from office holders, seeking ever more protection against the inevitable efforts of incumbents and other potential candidates to influence the construction of the districts they intend to run in. In a straightforward legislative redistricting, members of the legislature negotiate with each other and the Governor to pass a bill that incorporates the

[4] Ronald E Weber, *Redistricting and the Courts: Judicial Activism in the 1990s*, 23 AMER. POL. QUAR. 204-228 (1995)
[5] DAVID BUTLER AND BRUCE E. CAIN. CONGRESSIONAL REDISTRICTING COMPARATIVE & THEORETICAL (Prentice Hall, 1992).

changes in existing district boundaries necessary to comply with the equal population mandate set forth in the *Baker v Carr*[6] and *Reynolds v Sims*[7] line of cases.

Reformers tried to lessen this inherent conflict of interest by transferring the line drawing task from legislators to actors with less direct personal interests at stake such as statewide elected officials, nonpartisan bureaucrats or members of the public. But when elected officials who are tied to one another by common party interests appoint members of the public, it often does not sufficiently sever, or even have the appearance of severing, the line of influence between the appointers and the appointees; hence, the need for random selection.

Several of the newest IRCs employ a lottery appointment process, including California in the last redistricting cycle and most recently, Michigan and Colorado for the one in 2021. While there are many variations in specific details such as designating the entity that will actually conduct the lottery or how the pool of candidates for Commission membership is pared down to a manageable number, there are several common elements to their specific random selection designs.

First, all of them constrain the citizen applicant pool for the sake of competence and limiting conflict of interest. For instance, California requires that its IRC members must have voted in two of the last three statewide elections in order to demonstrate a minimum degree of citizen commitment and familiarity with the electoral processes. They must also exhibit through interviews and essays appropriate data analytical skills and sensitivity to diversity issues. The California process disqualifies citizens and their family members who have been candidates for public office, registered lobbyists, paid legislative staff or those who donated more than 2000 dollars to an elected candidate within the last ten years. Colorado has similar restrictions but within the last five years.

Secondly, all three Commissions ensure partisan balance by explicitly designating sub-pools of Democrats, Republicans and Independent voters from which members are randomly selected. California's Commission requires five registered Democrats, five registered Republicans, and four members who are registered with neither major political party. Michigan's thirteen person IRC consists of four members who "self-identify" with the Democratic Party, four with the Republican Party and five who identify as unaffiliated with either major political

[6] 369 U.S. 186 (1962).
[7] 377 U.S. 533 (1964).

party. Colorado's new Commission will have 12 members, evenly distributed between the same three categories of partisan affiliation.

Thirdly, the three IRCs further restrict the decision-making autonomy of their Commissioners by means of formal and political fairness criteria that the Members must adhere to when considering various district plans. The IRCs must meet the federal standards of equal population and constitutional voting rights obligations. But in addition, the line drawers must also follow any additional state mandated legal standards such as achieving compactness, respect for city and county boundaries, political fairness and some number of competitive districts.

In short, lottery selection in these cases is bounded by constraints concerning who can serve and what they can do when they are on the Commission. The composition of IRCs is more properly described as a stratified random sample process based on certain minimum qualifications. Based on California's experience, the Colorado and Michigan IRCs will likely skew towards technocratic members given the demands of working with data and computers. [8] Moreover, sortition is only one element of an overlapping prophylactic design intended to insulate Commissioners from outside influences and to guide them in a deliberative direction towards a legislative boundary plan with pre-specified goals and transparent rationales. All three Commission designs also specify voting rules that require supermajority consensus across the various categories of partisan affiliation. While citizens can provide input through public hearings and formal submissions to the IRCs, the general public does not get to vote on the choice of new districts. In other words, the IRC outcomes are not designed to be representative of unfiltered public opinion.

Does random selection actually insulate IRC members from outside influence? It indisputably removes one obvious motive that might otherwise distort a Commission member's judgment: i.e. gratitude to an elected official for an appointment. Even though the source of an appointment does not always dictate an appointee's behavior, it can do so in some instances. And even if it does not create an actual dependence relation, it can seem so to the public—i.e. the appearance of corruption logic that underlies conflict of interest regulation. Whether or not Commission members actually feel appreciative or obligated, the suspicion that they might undermines the public's perception that the Commission's actions are legitimate.

[8] Bruce E. Cain, *Redistricting commissions: a better political buffer*, 121 YALE L. J. 808-1843 (2011).

None of this of course addresses the more expansive problem of felt obligation to a political party by virtue of being selected from a particular partisan pool. Partisanship has increased significantly in the US during the last two decades. Moreover, it is hard to compromise with the other side when Commission transparency requirements make all conversations and agreements discoverable. Unlike a jury that can be sequestered for several weeks, redistricting usually takes many months to complete, making separation and non-communication with the outside world particularly onerous. But without that insulation, Commissioners are free to have conversations with neighbors and fellow partisans in social settings that could influence their decision-making and convey precisely the expectations that random selection was meant to sever.

There is also a contradiction between the bipartisan makeup of IRCs and their claim to independence. The critical question about present day sortition is whether building independence from office-holder influence is sufficient to create independence from partisan influence or foster constructive deliberation. With the expansion of the welfare, service and regulatory functions of contemporary governments, many citizens have potential interests that are affected by a whole range of legislative functions from the general (policy-making) to the particular (oversight and constituency services). Sortition can alleviate a specific sense of obligation that an appointed member might feel at the time they are selected, but cannot sever any sense of future return that might come from having certain parties, factions or office-holders in government.

The bipartisan design of the California, Colorado and Michigan IRCs reflects the expectation that the Democratic and Republican pool members will indeed be influenced by their partisan attachments. However, another premise of the tripartite design is that non-affiliated members will act independently. Given that so-called independents actually are mostly weak party identifiers and leaners who only vary from other partisans by the degree of their loyalty, this assumption is empirically dubious. The alleged Democratic bias of Arizona's IRC "Independent" Chair, for instance, was a source of bitter contention between the two major political parties in 2011.[9]

Political systems like the British with strong civil service traditions assign the boundary drawing task to nonpartisan administrators with far less suspicion and controversy. America's election administration is too riddled with partisan figures and patronage appointments to inspire that level of confidence. And even if we could find such people, the lack of any bipartisan consensus over the value and priority of different redistricting

[9] Cain, *Id.* at 1833.

values undermines any purely impartial method of weighing the competing merits of given plans at least for the foreseeable future.

In sum, while sortition by itself might eliminate a specific kind of dependence, it must be embedded in other protections to be effective. This logic leads to the Rube Goldberg complexity of the California IRC design that combines lottery design with elements of essay length applications, in depth interviews with the state auditor's office, voire dire by legislative leaders and a 10 year ban on most forms of serious political participation. But when all is said and done, IRCs are still vulnerable to failure by deadlock. Dealing with this requires new forms of randomization strategies.

III. BEYOND SORTITION: RANDOMIZED CHOICES & OUTCOMES

Sortition uses randomization to break connections that might otherwise undermine democratic processes and outcomes. The norm of formal equality in a Western democracy must peacefully coexist with the numerous social and economic inequalities generated by capitalism as well as natural differences across individuals in motivation and ability. The latter exacerbates problems for the former when the inequalities in civil society replicate themselves in the political system through channels of influence and dependency. Random selection breaks the potentially problematic implicit or explicit quid pro quo trades of support for loyalty by making the selection a matter of chance--there can be no quo without a quid. It of course also severs dependency on voters and hence electoral accountability. Therefore political theorists typically (but not always) envision sortition as a supplement rather than a substitute for conventional representative government.

This is all pretty intuitive. But it is less obvious that randomization can also facilitate the kind of deliberative bargaining that many political theorists aspire to instill in contemporary democratic processes. Randomization strategies pervade every day life as tactics to bring resolution, incentivize consensus and further pluralist principles of non-dominance and complementarity in democratic design. All of this applies to any rational deliberation an IRC might undertake when it considers the various trade-offs entailed in drawing new district boundaries. In the sections that follow, I will illustrate how some redistricting bargaining norms derive from randomizing principles, and then how randomizing algorithms can alter the context of redistricting choices in ways that might lead to better outcomes.

A. TAKING TURNS

In every-day life, there are situations in which individuals choose to take turns performing duties or experiencing privileges that cannot be or are not shared for whatever reason. When flipping a coin to make a decision, the outcome should over the long run yield equal probabilities of heads or tails. In a similar way, the frequency over time that you have taken your turn in a large group should roughly reflect the odds of a random draw. This is deemed fair because those who have participated in taking turns agree that the reason for taking a turn is dictated by a procedurally neutral process that does not favor any participant for any other reason.

This is a good practice in redistricting as well. Typically a legislative body or IRC with the responsibility of drawing boundaries must split some neighborhoods, cities or counties in order to equalize district populations. The ideal population in redistricting is defined as the total population divided by the number of seats. When the populations of the existing districts are recalculated with new census figures, some will be under-populated relative to the ideal number, some will be overpopulated and some will be close to the new target number.

In general, local government jurisdictions do not want to be divided as it lessens their influence on the district's representative and disturbs existing working relationships. However, because the population changes of neighboring districts ripple through the entire plan, it is hard to anticipate whether your community will need to be divided in order to equalize district populations. In public testimony, local residents and their officials will plead to be kept whole and argue that they have the requisite population for an entire district or are too small to be divided. This ignores the population deficits and surpluses of all the surrounding districts.

This misunderstanding causes considerable disappointment and anger, but is unavoidable. One way of dealing with this problem is to invoke the norm of taking turns: i.e. if a community has to be divided at the Congressional level then it should not be divided at other levels as well. Needless to say, when a gerrymander is intended, there can be political reasons to cut out potentially hostile voters or add in supporters that will be replicated at both the state and federal levels. If the process were totally random, then the odds of a city being divided would be determined solely by its size, not its politics. A city with population that exceeds the ideal district target must necessarily expect to be divided. But most cities and towns are typically not that large, and for them the rule of taking turns helps to placate the unfortunate and assure them that they are not being treated unfairly. Taking

turns can also be utilized over time: if a small community was split in the previous decade, then the presumption would be that it should not be split in the present decade for the sake of fairness.

B. BREAKING A TIE

The possibility of deadlock is high when no one party or faction controls the redistricting process. Under conditions of divided government, it is common for parties to hold out for what they want, forcing the redistricting task to go to the court system. Courts then typically hire a Court Master to draw the lines for them under tight time pressures. In general, Courts do a better job of drawing lines for good reasons than state legislatures, but the end product is usually not above partisan dispute. The increasing partisanship that surrounds federal and state court appointments has only heightened suspicions and concerns about the judges' potential redistricting bias. Prior to *Baker v Carr*, the courts invoked the political question doctrine to stay out of the political quagmire associated with the redistricting responsibility.[10] The demise of that doctrine in conjunction with rising partisan polarization has increased the risks this task poses to the Courts' reputation for impartiality.

This is one reason that many legal scholars hope that IRCs will succeed. But in the interests of bipartisan fairness, the IRCs have created three partisan pools (i.e. Democrats, Republicans, Independents) and required that plans must pass with some specified degree of consent from all of them. This in effect raises the odds of deadlock and thus the chances that the line-drawing responsibility will revert to the courts. This tie-breaker problem is not novel or unique to IRCs. The same issue plagued earlier more political commission proposals. Over the years, people have proposed various solutions such as randomly removing members until agreement is reached or having a computer randomly draw the lines purely on the basis of equal population and compactness. The former however, did not always guarantee agreement, and the latter did not satisfy state and federal requirements sufficiently.

However, technological progress offers new opportunities for random selection that were not feasible in the past. The ideal of computer drawn lines with minimal human intervention has a long lineage. The earliest algorithms could not optimize over several competing redistricting criteria, producing at best compact shapes with equal population while leaving out critical considerations such as racial and political fairness, respect for city and county

[10] Louis Henkin, *Is There a" Political Question" Doctrine?* 85 YALE L. J. 597-625 (1976).

lines, and other state or local criteria.[11] Advances in computing and programming now make it possible to draw a large population of alternative plans that meet all the various constitutional and legal criteria. These methods are still evolving but it is not hard to envision a time in the future when they will eventually be widely available to line drawers and the public.

The value of letting the computer generate a large number of hypothetical plans that meet multiple legal and constitutional thresholds is that it contextualizes the features of any given redistricting proposal as compared to all possible alternatives.[12] This allows the courts or an IRC to evaluate whether any specific plan is an outlier in terms of racial/political fairness formulae, city/county splits, compactness scores and the like.

There are several ways one might use this tool. First, it can be a detection device, raising a red flag if a plan is a real outlier as compared to other options. This application would allow people to raise questions about the plan's true objectives and whether an extreme deviation/outlier feature was necessary in order to achieve another legal or constitutional requirement.

Secondly, it can be used as a line drawing tool. The Arizona Independent Redistricting Commission, for instance, currently starts with a bare minimum equally populated plan and then negotiates modifications to that framework in order to make it compatible with state or federal redistricting criteria and public input. They could instead start with a plan that was constitutional with respect to all criteria and modify from that point of reference.

Even more to the point about the dangers of court involvement in the inherently political task of drawing district lines, automated redistricting could be used to insulate the courts from political criticism when they are the line-drawers of last resort. As mentioned before, a court typically hires a Court Master in this situation and gives him/her instructions to come up with a plan. While the resulting product is typically less biased than anything produced by a state legislature, every partisan edge matters these days. All too often the partisan reactions to court drawn plans can be predicted by the partisan composition of the court panel, especially if a three judge

[11] Sidney Wayne Hess, J. B. Weaver, H. J. Siegfeldt, J. N. Whelan, and P. A. Zitlau, *Nonpartisan political redistricting by computer* 13 OPERATIONS RESEARCH 998-1006 (1965).
[12] Bruce E. Cain, Wendy K. Tam Cho, Yan Y. Liu, and Emily R. Zhang, *A Reasonable Bias Approach to Gerrymandering: Using Automated Plan Generation to Evaluate Redistricting Proposals*, 59 WILLIAM & MARY L. REV. 1521-1556 (2018).

panel splits along party lines. This taint only worsens court legitimacy and polarization with respect to future judicial appointments and decisions.

However, if courts were to choose from a top set of randomly drawn plans that met various criteria thresholds - this would help on two counts. First, it would alleviate the courts' partisan taint problem since the choices are randomized over a range of criteria thresholds. In this sense, there is a similarity between the goal of sortition and automated redistricting in terms of insulating the line drawers from outside pressure caused by judicial appointment or election. Secondly, it rolls the dice for the political parties when they refuse to come to agreement on their own. Partisans in the legislature and IRCs are less likely to compromise if they believe an expected outcome in a court plan would be more favorable to them. Currently, if a party for whatever reason believes that they will do better for partisan reasons with a particular judge or panel, they have incentives to hold out. Random choice creates strong uncertainty about the court's plan selection and should thereby increase the odds of bringing opposing parties to compromise.

C. IMPROVING DELIBERATION

A third use of automated redistricting is as a tool for developing better evaluative frameworks for IRCs that could make IRC and legislative bargaining more deliberative and fair. Currently, IRCs and legislatures receive lots of public input, including fully developed plans. Mostly, they try to find the plans that yield enough votes among their members to pass. Closure is a necessary but not sufficient goal for a more deliberative negotiation. Ideally, those who decide district boundaries should search over all options and improve the status quo to some degree according to various federal and state criteria. Since improving in one criteria can involve tradeoffs with others—e.g. better population equality require splitting some cities and counties—it is impossible to specify an optimal plan without at least ranking the order of importance of these criteria. This could of course be a subject of deliberation, and may in some circumstances lead to a consensus. But more often, it is easier to define an acceptable range, as happened with population deviation. For instance, state legislative districts are considered to be close enough to population equality if they fall within a range of plus or minus 5%.

However, arriving at thresholds values is not an easy task, and even with population deviations, it took several decades and various Court rulings to arrive at a consensus. To state the obvious, tools and measures are not standards per se. We can measure city or county splits, but what is an acceptable number of jurisdictional subdivisions? We were able to agree on the acceptable deviations from the ideal population for Congressional and

non-federal seats but can we do the same thing for formal criteria or fairness measures? And how would automated redistricting assist?

The framework I suggest, analogous to population deviations, is a "reasonable range" that allows enough flexibility in each of the formal and fairness criteria for tradeoffs but limits extreme outlier choices, and if adopted, could lead improved outcomes. This could be done in several ways. Consider some possible bargaining modes IRCs in particular could use to incentivize improvement from one decade to the next.

1. *The "at least as good as the status quo" method.*

If a plan from the previous decade is deemed noncontroversial, the formal criteria and fairness of the status quo lines could serve as the baseline for new negotiations. Any proposals for new lines would have to either meet or exceed the status quo threshold values. Automated redistricting could be used to generate these possible alternatives or to evaluate claims that it was not possible to draw lines that improve upon the status quo in any given dimension without weakening the score of some other criteria.

1a. *The Balancing criteria method.*

A variant of the first is to entertain offsetting gains and losses of different plans with respect to the formal and fairness criteria. This gives the most flexibility to the line drawers (and hence allows the most room for political controversy). Automated alternatives could be used to check the claim that some losses in one or more criteria are necessary in order to achieve a substantial gain in another. For instance, this is likely the kind of question that would arise when assessing the effect of additional voting rights seats on political fairness or the number of competitive seats.

2. *The Hard deviation cap method.*

Here you would begin with a total population of automated plans. Then the redistricting body would set an allowable deviation from the average value of each criteria. For formal criteria like city splits or compactness, you

would only constrain the bad deviations (e.g. more city splits, worse than average compactness scores, etc.) but for political fairness scores that range between favoring one party versus the other, you would necessarily constrain both ends of the range. In short, the automated redistricting plans would identity a range of possible values that would then inform the determination of threshold cut-offs between acceptable and unacceptable values.

3. *Inducing bargaining steps.*

In the New Jersey Commission setting, or in the case of a Governor trying to induce bipartisan compromise, automated redistricting could be used to demonstrate the existence of win-win or shared sacrifice alternatives at each stage of the bargaining, eliminating the need for the negotiator to take the word of the consultants on either side.

4. *Top set optimization.*

From a set of automated plans, it would be possible to identity a top set of plans that have the highest combined scores across all the criteria. This requires weighting the importance given to each criterion in some agreed upon way, or creating an index based on the number of criteria that are improved above some threshold value.

Any of these methods would add to the goal of improving redistricting over time. Taking turns and breaking ties address the problem of unequal treatment while automated redistricting can be used like sortition to enhance legitimacy and better outcomes. By randomly drawing a large sample of all possible plan choices, it puts any given proposal in perspective, and identifies choices that can improve on the status quo in various ways. This is more likely to be appealing to IRCs than state legislatures, but the example of better redistricting practices has to start somewhere.

CONCLUSION

The renewed interest in randomization combines old purposes with new ones. Random selection, as it has always done, severs unwanted influences and obligations, which will make Independent Redistricting Commissions more independent from incumbent pressure. I am more skeptical of its efficacy with respect to partisan loyalty and the problem of deadlock. It is also clear that there are norms of fairness that imply that no community or group should suffer disproportionate burden that are based at least implicitly on the notion of random draw based on circumstances such as population size. Randomization can also be used in conjunction with automated algorithms to break ties and protect the Court when it has the unenviable task of creating a redistricting plan. And by exposing a very large sample of possible alternative plans, automated redistricting algorithms provide a context for a more informed choice and methods for improving the redistricting outcomes over time.

It may seem ironic that a purely democratic design requires randomization to protect against special interest influence or provide a more complete consideration of possible alternatives. But a pluralist conception of governance looks for design complementarities, balancing the weakness of one part of the political system against the strengths of other parts. Randomization has been revived because democracy has weaknesses that have to be addressed or checked in seemingly non-democratic ways. Random selection of either officials or alternatives is necessarily bounded and limited in scope, but ultimately serves democratic purposes when it insulates officials from distorting influences and improves deliberation over choices. Given the state of current redistricting practices, there is much room for improvement.