How to Amend a Constitution? Model, Axioms, and Supermajority Rules*

Extended Abstract

Ben Abramowitz
Weizmann Institute of Science
abramb@rpi.edu

Ehud Shapiro
Weizmann Institute of Science
ehud.shapiro@weizmann.ac.il

Nimrod Talmon
Ben-Gurion University of the Negev
talmonn@bgu.ac.il

ABSTRACT

A self-governed society must have decision rules by which group decisions are made, and these rules are often codified in a written constitution. One of the defining features of a constitution is its degree of entrenchment, or how hard it is to change by amendment. If it is too easy to make amendments, then the constitution can change too frequently, leading to chaos. On the other hand, if it is too hard to make amendments, then this can also be destabilizing, as voters may begin to see the rules as less legitimate, or even seek to overturn the status quo in a revolt. As norms, priorities, and circumstances change over time and over generations a constitution must be able to adapt. Our work considers a stylized model of constitutions that use reality-aware supermajority rules to make decisions. We propose principles for designing amendment procedures for changing decision rules in these constitutions and propose a novel procedure based on these principles.

KEYWORDS

Reality-Aware Social Choice, Online Communities, Constitutions, Supermajority Rules, Revolution

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1 INTRODUCTION

Supermajority rules are a common form of entrenchment: e.g., consider a community that requires a 2/3 supermajority to accept any proposal, otherwise rejecting it in favor of the status quo. If this group considers changing the rule, say to 1/2 or a 3/5 supermajority, then what procedure should be used to enact this change? If amending the decision rule is easier than passing a proposal, the rule for deciding on proposals may be changed opportunistically, as happened with the "Nuclear Option" in the United States Senate. But while entrenchment can make a constitution and society more stable, excessive entrenchment can cause destabilization [4, 11]. Here we formally tackle such issues, offering rules for such settings.

Preliminaries. Let V be a set of n voters and A be a set of alternatives. For $x, y \in A$ we say that y beats x by a δ-supermajority if it is preferred by (strictly) greater than a fraction δ of the voters; i.e., if $|\{v \in V : y \succ_v x\}| > \delta n$.[1] $x \succ_v y$ means that voter $v \in V$ (strictly) prefers x to y. Let $r \in A$ be the status quo. The δ-supermajority rule (R^δ) is the reality-aware rule that elects a proposal p against the status quo r if it beats it by a δ-supermajority, otherwise electing r [19]. We refer to δ-supermajority rules R^δ and their corresponding thresholds δ interchangeably. Let $\mathcal{A}$ be the set of $\lfloor \frac{n+1}{2} \rfloor$ distinct thresholds for δ-supermajority rules where $\mathcal{A} = \{\frac{k}{n} : \lfloor \frac{n}{2} \rfloor \leq k < n, k \in \mathbb{N}\}$. $R^{\frac{1}{2}}$ represents majority rule, where a proposal wins if and only if it is preferred by greater than 50% of the voters. Voters have preferences over values of δ, representing how large of a consensus they believe should be required for any collective decision. For every voter $v \in V$, we assume their preferences over $\mathcal{A}$ are single-peaked with $v \in \mathcal{A}$ as their peak or *bliss point*. We overload notation and let v represent voter v's bliss point in $\mathcal{A}$, and V represent the voters and the set of bliss points. Single-peakedness means for all $x, y \neq v$, v prefers x to y (denoted $x \succ_v y$) if $y < x \leq v$ or $v \leq x < y$.

2 AMENDMENTS

Amendments are naturally reality-aware [16, 18]. At any time there is a status quo decision rule R^r that the voters use for decisions other than amendments. The status quo r should be thought of as a state variable, which changes with each successful amendment. An amendment procedure $M : \mathcal{A} \times \mathcal{A}^n \to \mathcal{A}$ takes the status quo decision rule r (or R^r) and preferences of the voters (i.e., bliss points V) as input, and outputs a decision rule $w \in \mathcal{A}$ [16, 18]. We focus on amendment procedures that can be seen as implicitly selecting a δ to use for each amendment vote, so that the rule R^δ is used to decide whether to amend decision rule r. This can be seen in two steps as $M(V, r, p) = \delta$ and then $R^\delta(V, r, p) = w \in \{r, p\}$. We abbreviate this by $M^\delta(r, p) = w$. The preferences V of the voters are implicit in our notation.

A constitution specifies the amendment procedure M, the status quo r at any given time, the set of possible decision rules $\mathcal{A}$ and the order in which proposals are considered. A simple constitution

*A full version of this extended abstract is available [1].

[1]Note that here $1/2 \leq \delta \leq 1$, unlike in related work [17].

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could use majority rule ($M^{\frac{1}{2}}$) for all amendments. The iterated application of majority rule is frequently used for choosing values from single-peaked domains, because it converges to the median value [3, 7, 9]. In other words, if we fix $M(r,p) = M^{\frac{1}{2}}(r,p)$ for all $r,p \in \mathcal{A}$, the median bliss point will be the only stable decision rule.

Definition 1 (Stability). A constitution with amendment procedure M is stable at r wrt. preference profile V over the set of δ-supermajority rules $\mathcal{A}$ if and only if $M(r,p) = r$ for all $p \in \mathcal{A}$.

3 EVOLUTION AND REVOLUTION

Suppose M is fixed as M^{δ}, with $\delta < r$. A majority that is smaller than r, but larger than δ, may be driven to change the decision rule if they do not get their desired outcomes on decisions, as has happened with the "nuclear option" in the United States Senate. It is desirable that M use a δ that depends on r for each amendment.

Suppose $M(r,p) = M^r(r,p)$ for all pairs (r,p). We refer to an amendment $M^r(r,p) = p$ as an *evolution*, and say that M is *self-stable* at r with respect to V if $M^r(r,p) = r$ for all $p \in \mathcal{A}$[2]. If r is small, say $\frac{1}{2}$, then it has a greater tendency to evolve, but if r is large, say $\frac{n-1}{n}$ then we have the same problem as before, and may get stuck at a "bad" self-stable rule.

If a constitution allows a decision rule to be amended too easily, the constitution can be unstable and change frequently. However, if the constitution is too difficult to amend this can cause another kind of instability, in which people may reject the constitution itself and revolt [4, 11]. We therefore introduce other-stability. M is *other-stable* at r with respect to V if $M^p(r,p) = r$ for all $p \in \mathcal{A}$. In addition, an amendment $M^p(r,p) = p$ is a *revolution* if it is not also an evolution. Revolutions must at least be justifiable in hindsight.

Theorem 1. *Let $h = \arg\max_{x \in \mathcal{A}} |\{v \in V : v \geq x\}| \geq xn$. No $\delta < h$ is self-stable, and all $\delta \in [h, m]$ are self-stable and other-stable.* [3]

4 COMPLAINTS AND STRATEGY

A voter accepts an amendment if either they prefer the outcome to the alternative, or the application of their preferred δ-supermajority rule (R^v) (corresponding to their bliss point) would yield the same outcome; otherwise, they complain.

Definition 2 (Complaint-Freeness). An amendment $M(r,p) = w \in \{r,p\}$ is complaint-free if for all voters $v \in V$, either $w \succ_v \{r,p\} \setminus w$ or $R^v(r,p) = w$.

Any amendment $M(r,p) = p$ for $p < r$ may not be complaint-free. For example, a single voter $v = \frac{n-1}{n}$ might not accept for any r. Revolutions (that are not evolutions) are never complaint-free. Recall that if a rule in the range $[h,m]$ becomes the status quo no further evolutions or revolutions can occur. We propose a simple complaint-free procedure which always elects the self-stable and other-stable rule h. [4]

Algorithm 1 Evolutionary Constitution

$r \leftarrow 1/2$
for $p \in \mathcal{A}$ **do**
  $r \leftarrow R^r(r,p)$
elect r

If we consider that there is an existing reality r which may not be $\frac{1}{2}$, we can see the constitution above more as a hypothetical justification for electing h regardless of r even though the direct change from r to h may not be complaint-free. When electing h instead of the median we are giving up Condorcet-consistency in favor of this hypothetical complaint-freeness, and the sense of self-consistency that comes with evolutionary amendments rather than using simple majority rule for all amendments. Lastly, we note that the procedure $M(r,p) = h$ for all $r,p \in \mathcal{A}$, which always elects h, is strategyproof because it is a generalized median voter rule [6, 14].

5 RELATED WORK

The "consequentialist approach" to voting over voting rules assumes that voter preferences over possible rules are derived from their preferences over the outcomes each rule produces [6, 13, 15]. We take a different approach, more similar to that of Barbera and Jackson [5], in which constitutions are just a set of voting rules. Barbera and Jackson consider decisions under uncertainty, and focus on the use of majority rule as the decision rule. We consider a deterministic model of preferences, and introduce different axioms, including two lower-level notions of stability. The work most similar to ours is that of García-Lapresta and Piggins [10] who consider types of stability with preferences over an interval, but with trapezoidal fuzzy preferences. Perhaps the closest concept to our definition of other-stability is that of dynamic stability, [2]. We also mention Dietrich [8] in which voters each have an ideal decision rule.

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[2] Our definition of self-stability differs from [5] because it applies to decision rules, not constitutions
[3] We call this h because of its resemblance to the h-index in bibliometrics [12].
[4] The proposals $p \in \mathcal{A}$ are considered in strictly increasing order.

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