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Democracy for Polarized Committees: The Tale of Blotto's Lieutenants ☆

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ABSTRACT

In polarized committees, majority voting disenfranchises the minority. Allowing voters to spend freely a fixed budget of votes over multiple issues restores some minority power. However, it also creates a complex strategic scenario: a hide-and-seek game between majority and minority voters that corresponds to a decentralized version of the Colonel Blotto game. We offer theoretical results and bring the game to the laboratory. The minority wins as frequently as theory predicts, despite subjects deviating from equilibrium strategies. Because subjects understand the logic of the game — minority voters must concentrate votes unpredictably — the exact choices are of secondary importance, a result that vouches for the robustness of the voting rule to strategic mistakes.

1. Introduction

How should political power be shared? Majoritarian democracy is desirable under many criteria (Condorcet, 1785; May, 1952; Rae, 1969), but in polarized societies, where the same group is on the losing side on all essential issues, it effectively disenfranchises the minority.[1] Polarization can exist in rich as well as poor countries, in old as well as new democracies, and can predate the democratic institutions or be generated by the institutions themselves.[2] Referring to Northern Ireland, the Balkans, and other places plagued by civil wars, Emerson (1998, 1999) claims that in such situations majority rule is the problem, not a solution, and that more consensual rules must be implemented.

In modern democracies, the main tool for power-sharing is representation. The complexity of the political agenda, which unfolds over time and allows changing coalitions, logrolling, and compromises makes representation in Parliament valuable even to a minority. When group barriers are permeable, the minority can occasionally belong to the winning side. But when

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[1] Political philosophy has long recognized that the *tyranny of the majority* poses a fundamental challenge to the legitimacy of majority voting (Dahl, 1991).

[2] See Jacobson (2008), Fiorina et al. (2005) for the US case, or Reynal-Querol (2002), Eifert et al. (2010), Kabre et al. (2013) for African cases.

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preferences are fully polarized and the power of a cohesive majority bloc is secure — a scenario we refer to as a *systematic* minority — the minority remains disenfranchised. In some instances, therefore, power-sharing is imposed directly, and the constitution grants executive positions to specific groups, typically on the basis of their ethnic or religious identity.[3] The problem is that constitutional provisions of this type are difficult to handle and heavy-handed, thus unsuited to changing realities. We argue that power-sharing in polarized societies could be achieved in a more subtle and more flexible manner via the design of appropriate voting rules.[4]

The *Storable Votes* mechanism (henceforth SV) does just that: it allows the minority to prevail occasionally and yet is anonymous and treats everyone identically (Casella, 2005). In a setting with a finite number of binary issues, the SV mechanism grants a fixed number of total votes to each voter with the freedom to divide them as wished over the different issues, knowing that each issue will be decided by simple majority. SV can apply to direct democracy in large electorates, or to smaller groups, possibly legislatures or committees formed by voters' representatives, as in the model we study in this paper. In fact, our arguments apply to virtually any divided group: for instance, SV could be used by the board of directors of a company.

Although easy to describe, SV poses a challenging strategic problem: *how* should a voter best divide her votes over the different issues? Note a central ingredient of the strategic environment: the *hide-and-seek* nature of the game between majority and minority voters. If the majority spreads its votes evenly, then the minority can win some issues by concentrating its votes on them, but if the majority knows in advance which issues the minority is targeting, then the majority can win those too.

Such strategic interaction is studied in the literature under the name of Colonel Blotto game: in the original version of the game (Borel and Ville, 1938; Gross and Wagner, 1950), two opposite military leaders with given army sizes must choose how many soldiers to deploy on each of several battlefields. Each battlefield is won by the army with the larger number of soldiers. Each colonel could win if he knew the opponent's plan. At equilibrium, choices must be random.

The SV's model can be phrased as in the classical Colonel Blotto scenario, with "issues" and "votes" instead of "battlefields" and "soldiers". The game is asymmetric — the majority has more votes — and thus recalls Colonel Blotto analyses that allow for heterogeneous armies.[5] It differs however on one important dimension: it is a *decentralized* Blotto game. Each voter, whether in the majority or in the minority, controls a number of votes, to be allocated to the different issues. In its military analogue, it is as if multiple, individual lieutenant colonels in each of the two armies controlled their own battalions and chose how to distribute them over the different battlefields. Again, each battlefield is won by the army that deploys more soldiers.

To our knowledge, the decentralized Blotto game has not been studied before. In this game, although the interests of all lieutenants within each army are perfectly aligned, decentralizing the centralized solution is generally not possible: the centralized solution requires centralized randomization and thus cannot be replicated unless the randomization can be communicated, and communication is truthful and believed. The decentralized Blotto game can be of independent interest, beyond the specific application to SV's. From lobbying to campaign spending, from patent races to fighting criminal networks, traditional applications of the centralized Blotto games can be extended profitably to situations where one or both sides consist of multiple independent actors.

We start by studying the game in the absence of communication: we develop theoretical results, in particular results that will be useful for the experimental tests we describe in the second part of the paper. The game has many equilibria but, reverting to SV terminology, if the difference in size between the two groups is not too large, the minority is expected to win occasionally in all equilibria. We identify a class of simple strategies, neutral with respect to the issues and symmetric within each group, and characterize conditions under which profiles constructed with such strategies are equilibria. Strategies are such that each minority member concentrates her votes on a subset of issues, randomly chosen, and again induce a positive expected fraction of minority victories in equilibrium. In fact, the result is stronger and holds off equilibrium too: if each minority member concentrates her votes and does so randomly, the minority can guarantee itself a positive probability of victories, for *any* strategy by the majority, whether coordinated or not, and regardless of whether or not the minority voters all choose precisely the same strategy. When communication within each group is possible, the equilibria of the non-communication game continue to exist as chattering equilibria. However other equilibria exist, including the equilibria of the centralized Blotto game in which each of the two groups, the minority and the majority, acts as a single agent. Here we borrow from Hart (2008)'s results on discrete Blotto games and identify equilibria of the centralized Blotto game that hold for the parameter values we use in the laboratory. Again the theoretical prediction is a positive fraction of minority victories, in fact, interestingly, a very similar fraction to that predicted by our simple equilibrium strategies in the absence of effective communication, for the same parameter values.

We test the theoretical predictions in the laboratory in two treatments, one without and one with communication. In both treatments, the essential logic of the game — the minority needs to concentrate and randomize its votes — is immediately clear to minority players in the lab. In contrast, majority subjects appear to alternate between exploiting their

[3] For example, in Lebanon (Picard, 1994; Winslow, 2012), in Mauritus (Bunwaree and Kasenally, 2005), and occasionally elsewhere (Lijphart, 2004).

[4] Note that neither vetoes or supermajority requirements, nor logrolling can overcome the problem posed by a systematic minority. If on each issue there is a fixed majority of, say, 60 percent, versus a fixed minority of 40 percent, then vetoes and supermajorities stall all voting, and logrolling has no role because the majority is always winning.

[5] As in Roberson (2006) if soldiers can be deployed continuously, or Hart (2008) if soldiers are discrete.