

COMSCI/ECON 206 Week 6 Reflection: Voting & Mechanism Design

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Part 1. Case-Based Voting Issue: Student Leader Board Proposal

This project models a collective choice scenario faced by the Student Leader Board (SLB) at a university. A recurring governance challenge for student leaders is how to allocate limited funding across competing student interests. For illustration, I focus on the allocation of the annual activity budget.

Funding distribution is one of the primary responsibilities of student leaders. Such decisions often involve trade-offs between academic enrichment, cultural diversity, and campus community building.

To simplify, I reduce the issue to four policy options:

- **Option A:** Allocate most funds to academic clubs and research-related activities.
- **Option B:** Distribute funds evenly across all student organizations.
- **Option C:** Prioritize sports and cultural clubs to enhance campus life.
- **Option D:** Reserve a significant portion for large-scale campus-wide events.

Stakeholders and their ranked preferences:

- **Academic club representatives:** $A > B > D > C$
- **Sports and cultural club representatives:** $C > B > D > A$
- **General student body representatives:** $B > D > A > C$
- **Administrative advisor:** $D > A > B > C$

I chose this case because it captures the central tension of governance: balancing fairness and efficiency across diverse constituencies. Even within a small community such as a university, conflicts of interest and legitimacy challenges mirror those faced in larger institutions.

Part 2. Nobel Insights Applied to the Case

Arrow (1972) – Impossibility Theorem.

When preferences are aggregated, potential cycles emerge. For example, a majority might prefer B over A, A over C, and C over B, producing a Condorcet cycle. Arrow's impossibility theorem suggests that no voting rule can perfectly aggregate these preferences without trade-offs. Computation could help by simulating different aggregation methods (plurality, Borda count, Condorcet) to detect paradoxes and suggest compromise options.

Buchanan (1986) – Institutions and Rules.

If unanimity were required, gridlock would likely occur because each group prioritizes different options. Majority rule, however, risks alienating minority groups whose preferences are systematically ignored. Institutional add-ons, such as guaranteed minimum funding for all categories, could mitigate these tensions.

Hurwicz–Maskin–Myerson (2007) – Mechanism Design.

Mechanism design encourages us to ask: which rule best balances fairness and efficiency? A welfare-maximizing design might consider the intensity of student preferences, not just ordinal rankings. For example, using a quadratic voting system could allow stakeholders to allocate “voice credits” to express stronger preferences, achieving more efficient outcomes.

Acemoglu–Johnson–Robinson (2024) – Institutions and Legitimacy.

Institutional strength determines whether the outcome is accepted as legitimate. If the SLB voting mechanism is perceived as biased or manipulable (e.g., dominated by one group), legitimacy erodes. Transparent procedures, clear rules, and computationally auditable systems can enhance resilience against manipulation and increase acceptance among students.

Part 3. Forward-Looking Design Challenge

Inspired by these insights, I propose a hybrid quadratic-Borda voting mechanism for the Student Leader Board.

- **Problem solved:** It addresses fairness and legitimacy by letting stakeholders express intensity of preferences (quadratic voting) while maintaining comparability through rank aggregation (Borda count).
- **Computational method:** The mechanism could be implemented with a blockchain-based ballot system that records vote allocations transparently and prevents tampering.
- **Testing method:** A classroom simulation could test its performance compared

to plurality or simple majority. Alternatively, a GitHub prototype coded in Python could allow repeated simulations under varying preference distributions.

This design aims to reduce cycles, capture preference intensity, and ensure legitimacy through transparent computation. By experimenting with hybrid rules, the SLB could pioneer more representative and stable decision-making systems, preparing students to address governance challenges both on campus and beyond.

References

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