Towards a More Burkean Approach to Computational Social Choice

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Vancouver, AAAI 2024

What has COMSOC been doing lately?

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Liquid democracy 🍹

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Liquid democracy 

> The emergence of citizen participation systems in general—and of online voting platforms in particular—appears to be an irreversible development. The question is not if, but rather when, these systems become standard components of the democratic process.

What has COMSOC been doing lately?

Liquid democracy 🍹

Blockchain ⛓️

What has COMSOC been doing lately?

Blockchain ⛓️

> We expect this theoretical foundation and architecture to be realized as a common good, open and available to all. With it, autonomous democratic alternatives to existing digital autocracies and plutocracies may flourish.

What has COMSOC been doing lately?

Liquid democracy 🍹

Blockchain ⛓️

Sortition 🎲

What has COMSOC been doing lately?

Sortition 

> We love to talk of “democratizing AI” or “democratizing finance,” but democracy itself demands our attention. An algorithmic approach is crucial to the construction of new frameworks to engage citizens and give them a voice. But this apparatus of democracy comes with uniquely challenging instructions: “random assembly required.”

What has COMSOC been doing lately?

Liquid democracy 🍹

Blockchain ⛓️

Sortition 🎲

What has COMSOC been doing lately?

What's wrong with these?

Liquid democracy

Blockchain

Sortition

What has COMSOC been doing lately?

What's wrong with these?

Liquid democracy

NOTHING

Blockchain

Sortition

What has COMSOC been doing lately?

What's wrong with these?

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NOTHING

Blockchain

It's not you, it's me

Sortition

What has COMSOC been doing lately?

What's wrong with these?

Liquid democracy

NOTHING

Blockchain

It's not you, it's me

Sortition

OK, it is you

What don’t you like about these?

What don’t you like about these?

Liquid democracy 

Is direct democracy good?

Activist control

Promotes extremism

No give & take

What don't you like about these?

Liquid democracy 🍹

Blockchain ⛓️

(see Liquid)

Techno-utopia

Abstracts away society

What don't you like about these?

Liquid democracy

(some issues, like activist-takeover, as in Liquid)

Works for issues orthogonal to politics

Blockchain ⛓

Organizing raises control problems

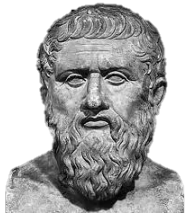
Corruption

Sortition 🎲

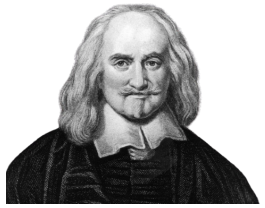
Assumption of foreknowledge of societal divides

What's the alternative?

What's the alternative?



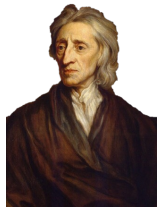
Plato



Hobbes

Tocqueville

Cicero

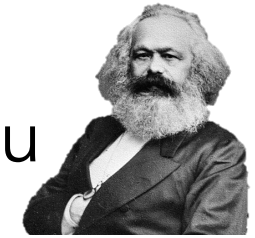


Locke

J.S. Mill

St. Augustine

Montesquieu



Marx

Machiavelli

Edmund Burke

What's the alternative?

Edmund Burke

What's the alternative?

Old establishments… are not often constructed after any theory; theories are rather drawn from them

Edmund Burke, *Reflections on the Revolution in France*, 1790

What's the alternative?

Old establishments… are not often constructed after any theorys theories are rather drawn from them

Look at what happens in the real world

Edmund Burke, *Reflections on the Revolution in France*, 1790

What happens in the real world?

What happens in the real world?

What happens in the real world?

Parties

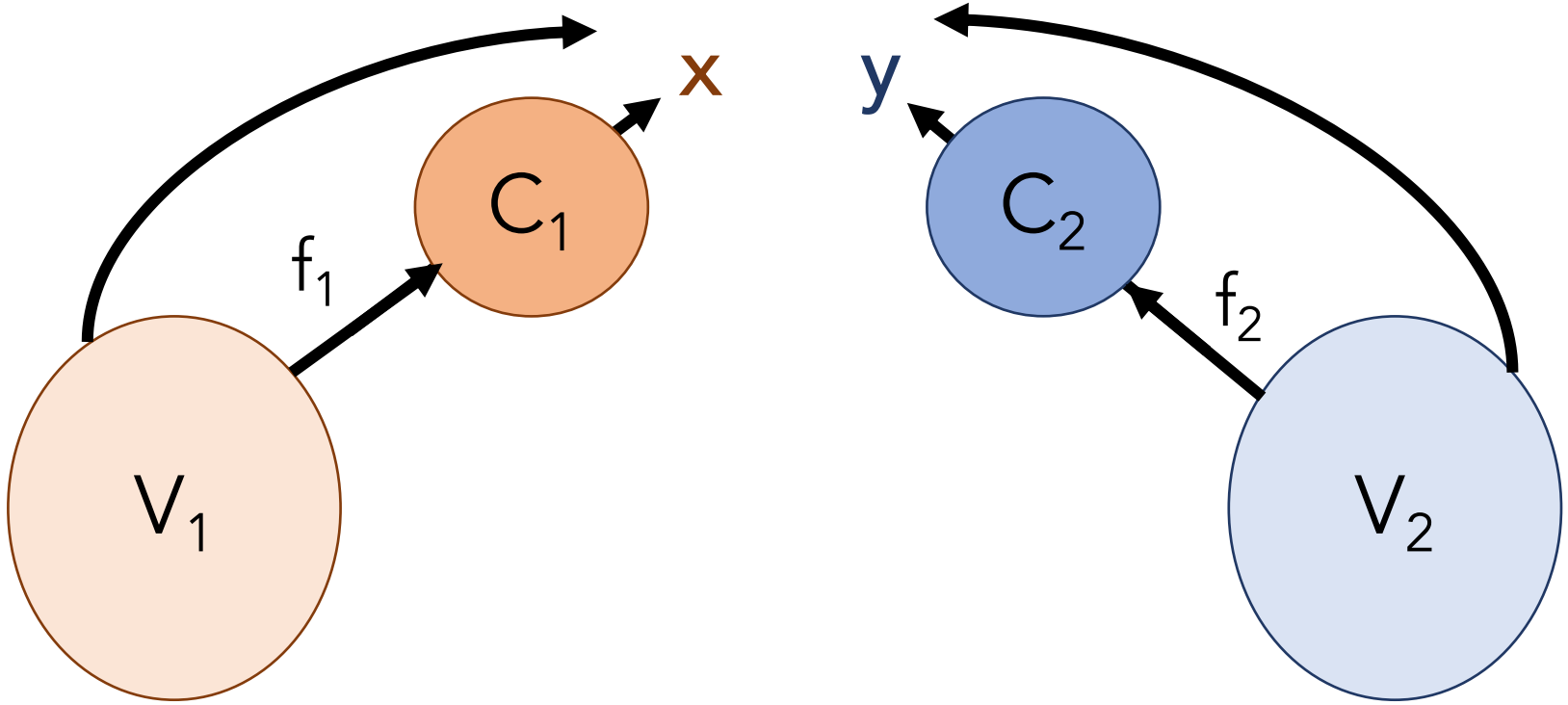
Parties

Aggregation (voters)

Elimination (candidates)

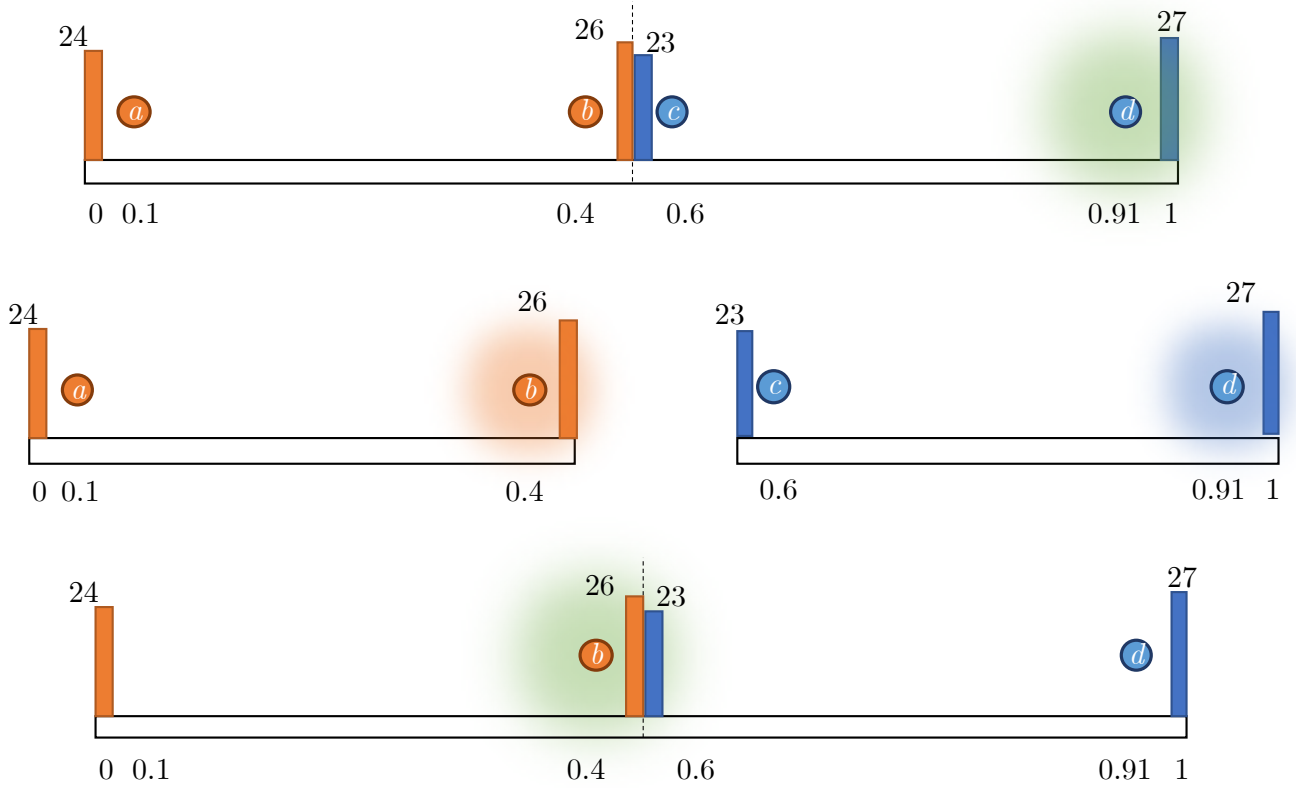
Some existing work on parties
primaries

A set **V** of voters, of size **n**; A set **C** of candidates
Both located in an ideological metric space.



Borodin, L., Shah & Strangway, *Primarily about Primaries*, AIJ 2024

Some existing work on parties
good primaries



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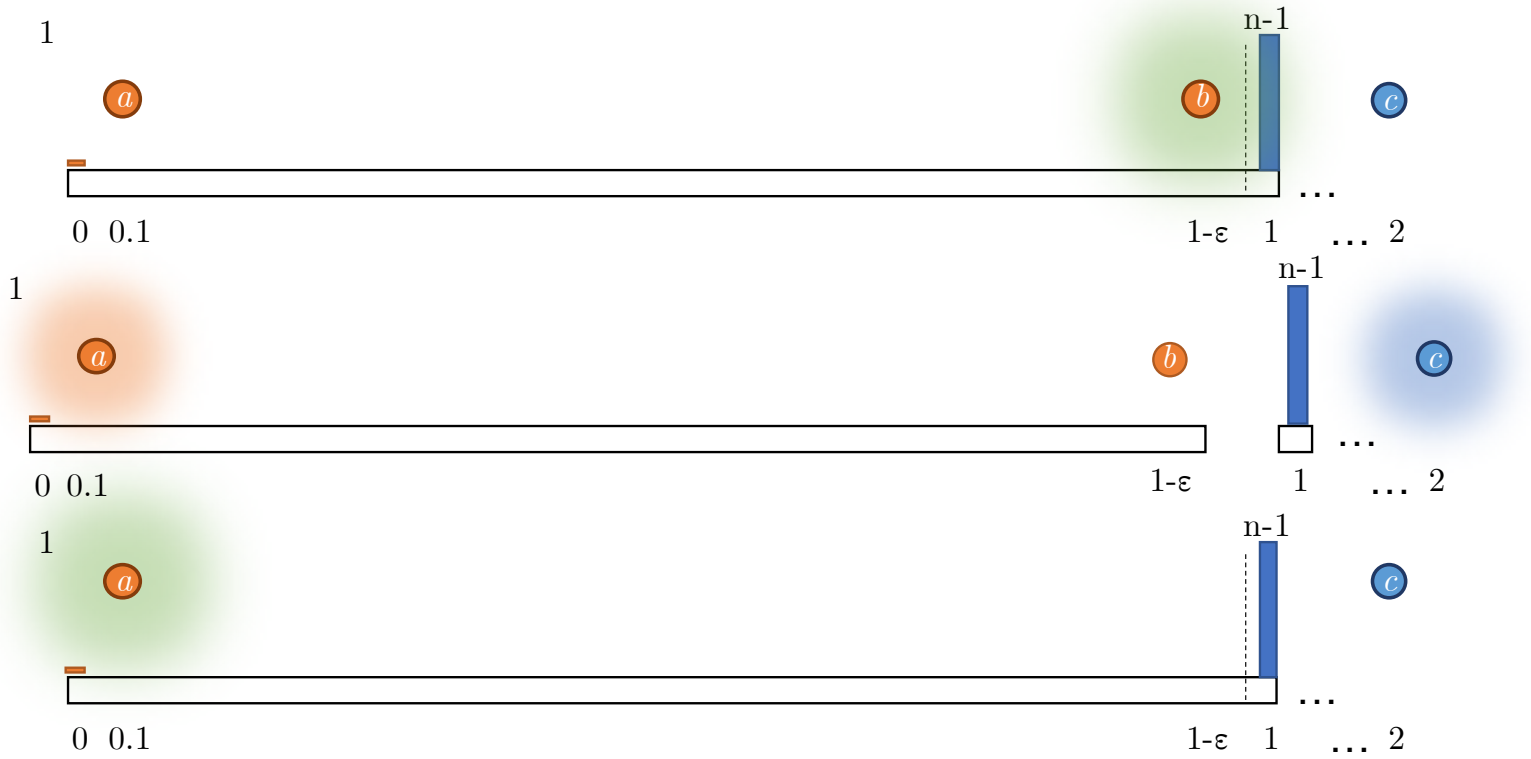

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Some existing work on parties
primaries' distortion

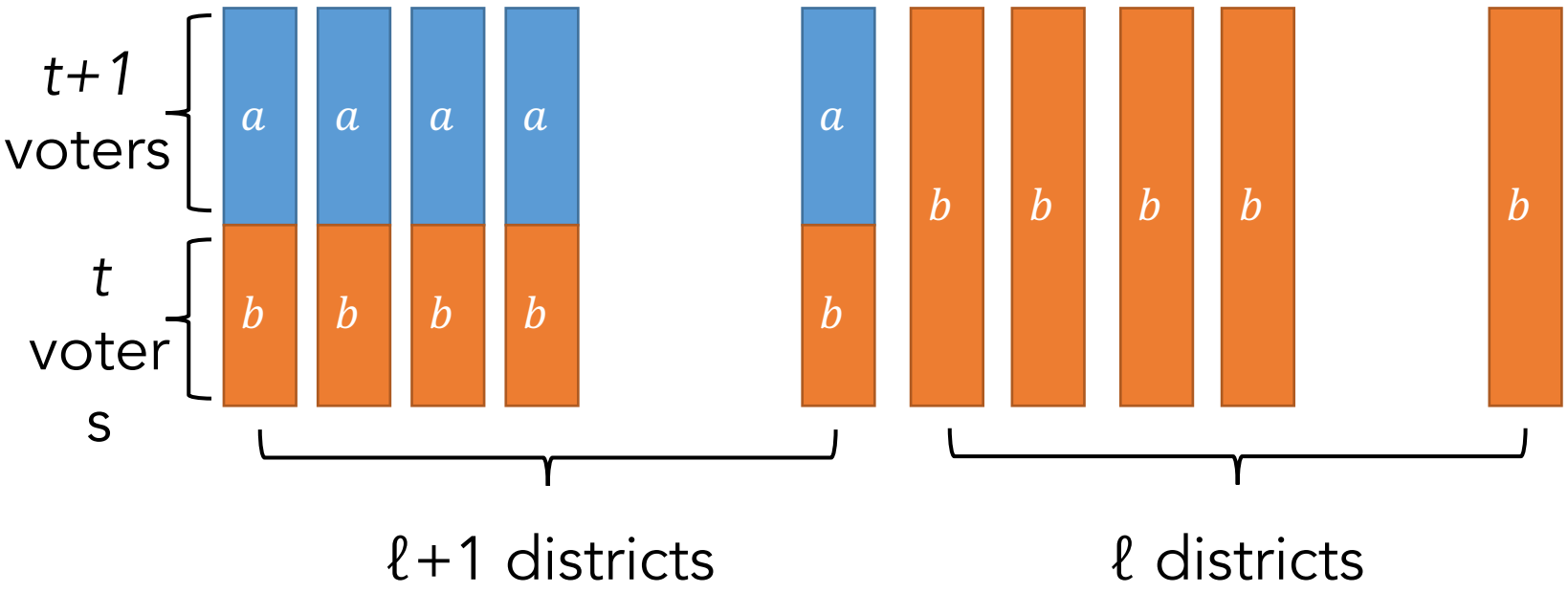
Primaries can increase distortion by, at most, O(1).

There exists a voting method for which without parties, distortion is O(n), but with primaries, it is O(1).

Borodin, L., Shah & Strangway, *Primarily about Primaries*, AIJ 2024

Some existing work on parties
Price of districting: Plurality, m=2

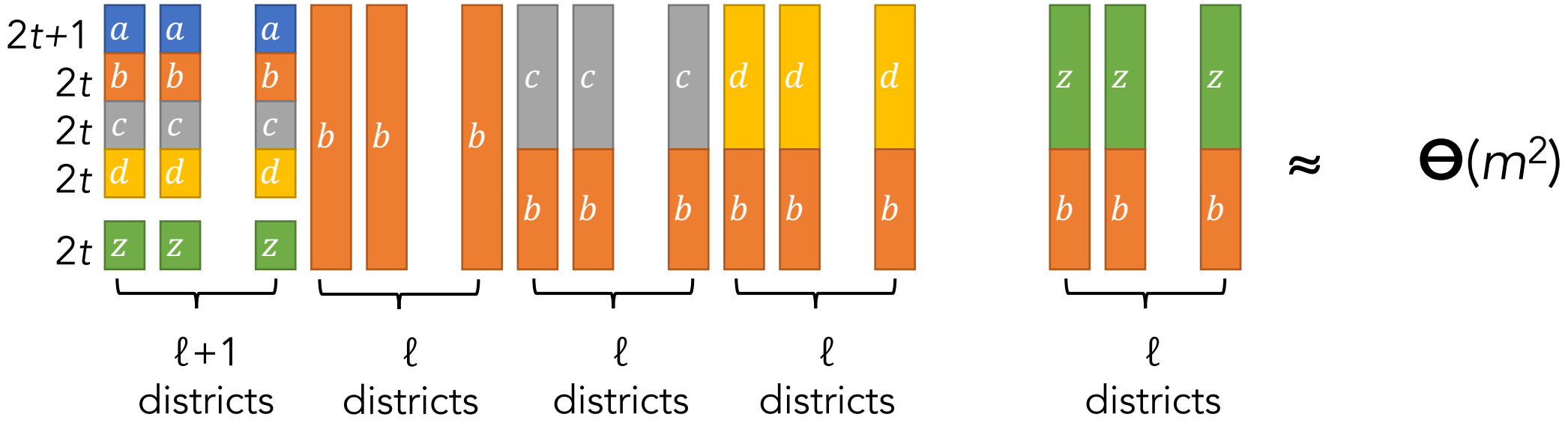
2 ℓ+1 districts, each with 2t+1 voters



$\approx$ 3

Bachrach, L., Lewenberg & Zick, *Misrepresentation in District Voting*, IJCAI 2016

Some existing work on parties
Price of districting: Plurality, any *m*



Bachrach, L., Lewenberg & Zick, *Misrepresentation in District Voting*, IJCAI 2016

Some existing work on parties
Price of districting: other rules

k-approval: $\Theta(m^2/k)$

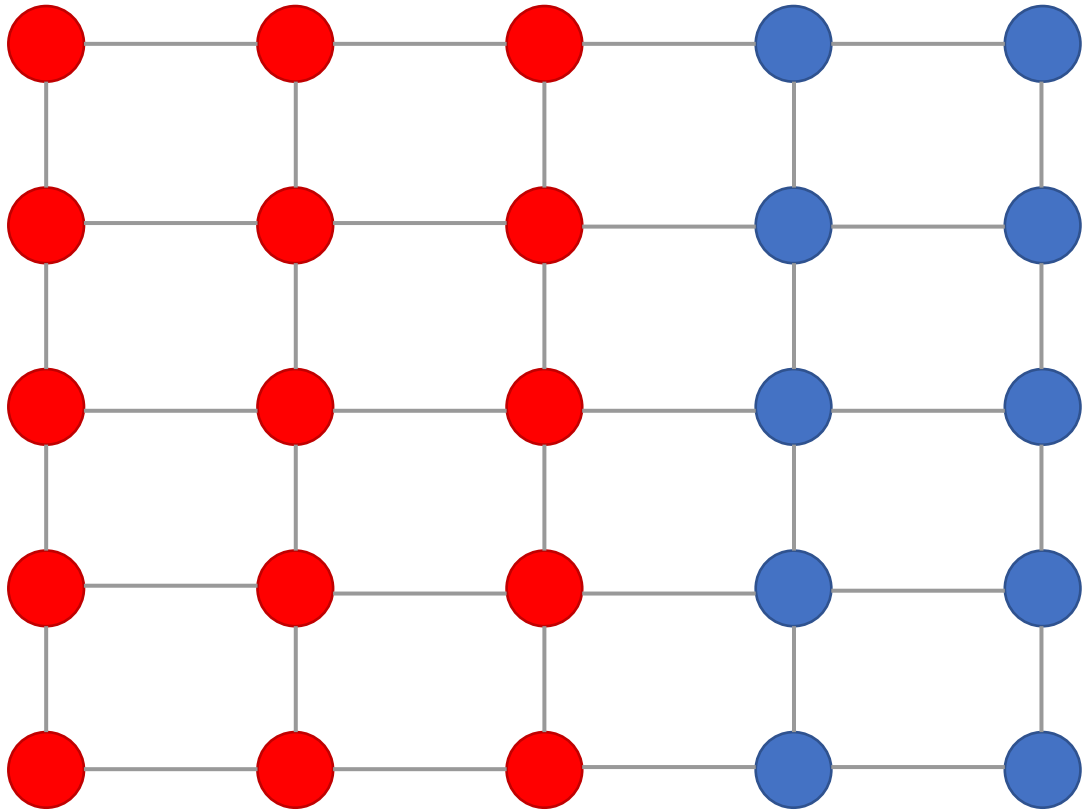
Veto: $\Theta(m)$

Borda: $\Theta(m^2)$

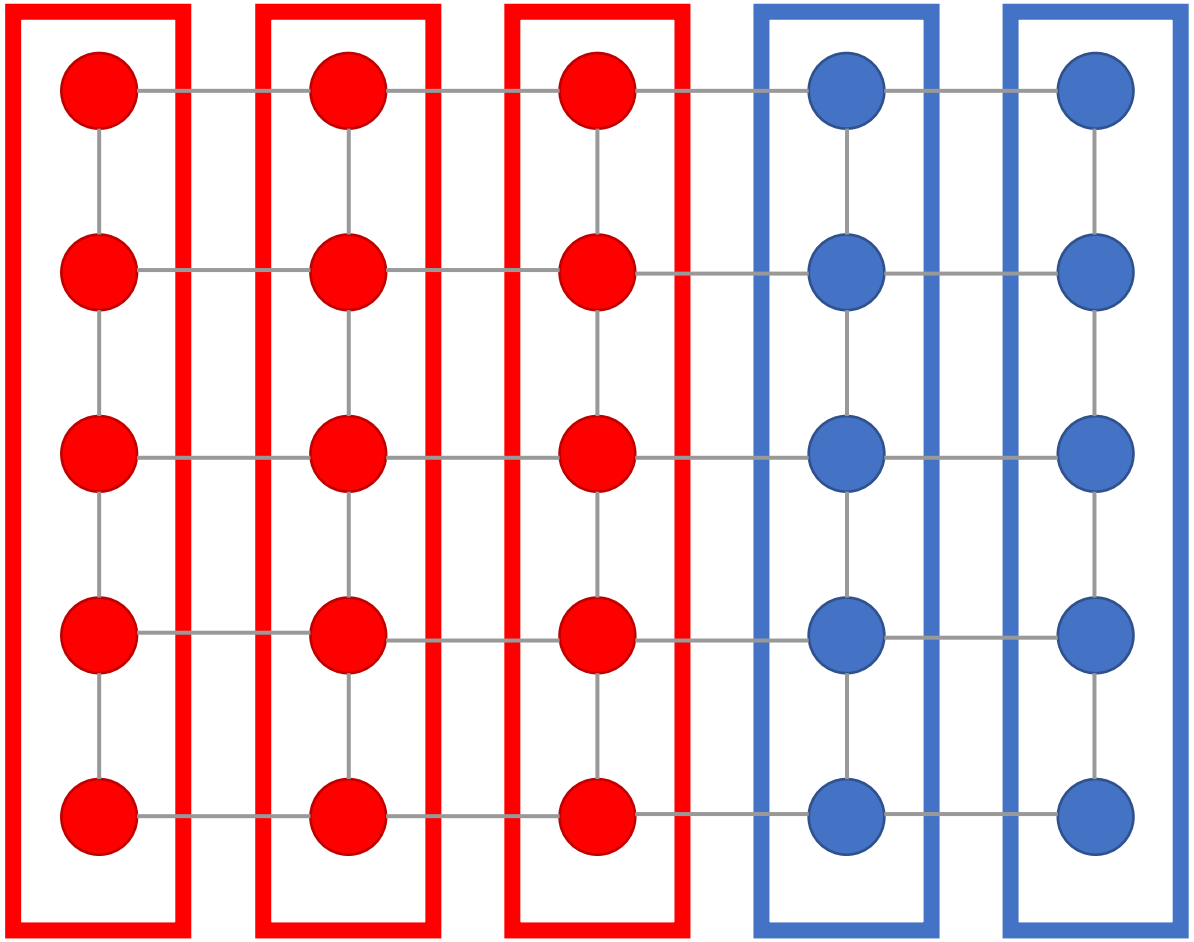
Copeland: worst possible
(winner has *1-m* score,
while a candidate with
m-1 score exists)

Bachrach, L., Lewenberg & Zick, *Misrepresentation in District Voting*, IJCAI 2016

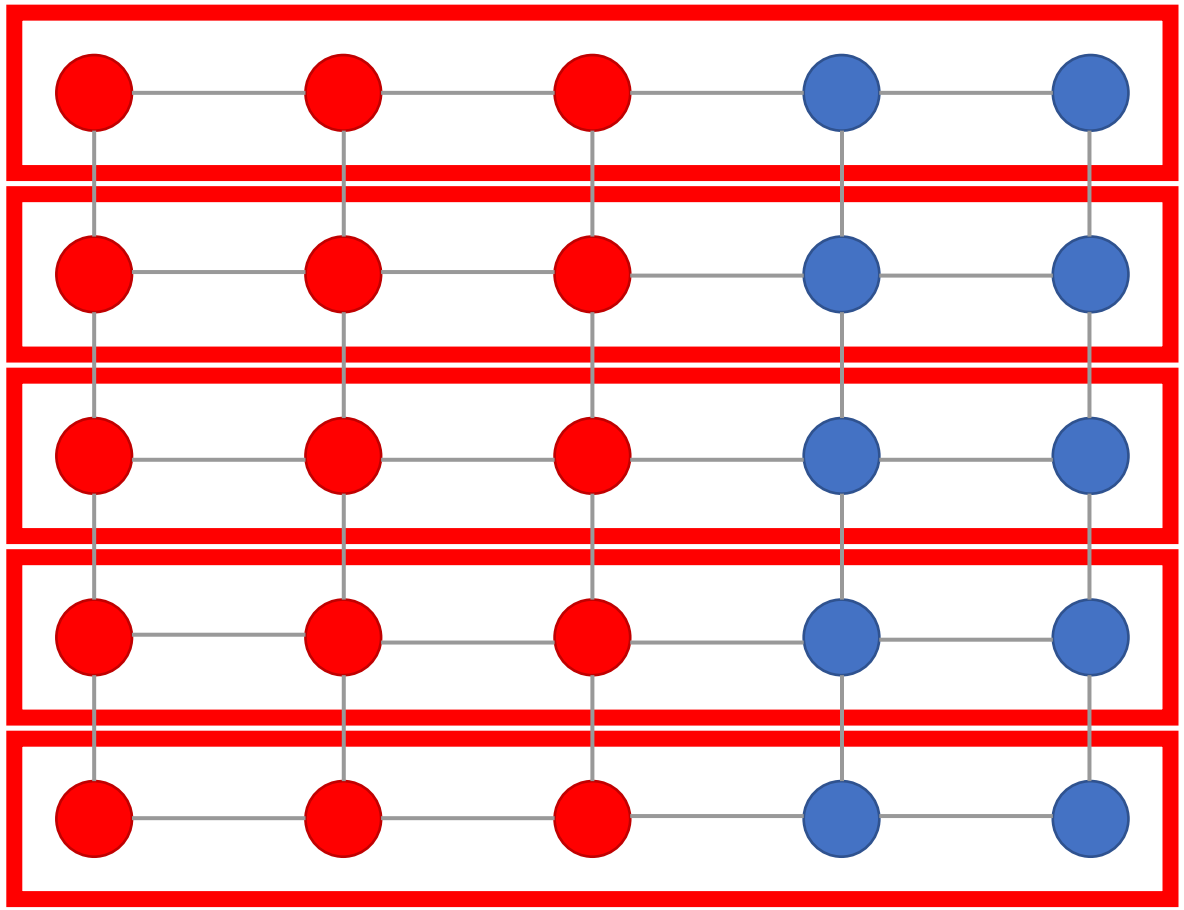
Some existing work on parties
Gerrymandering



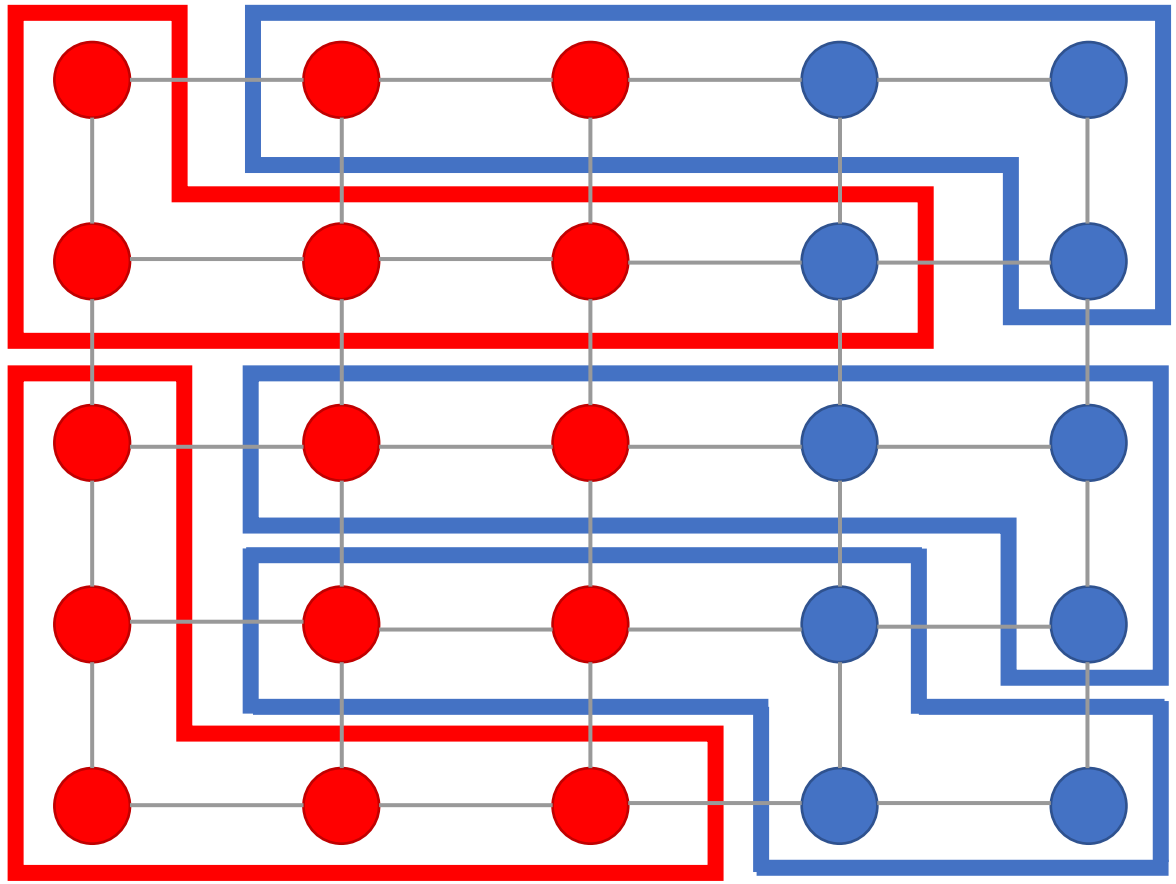
Some existing work on parties
Gerrymandering: proportional



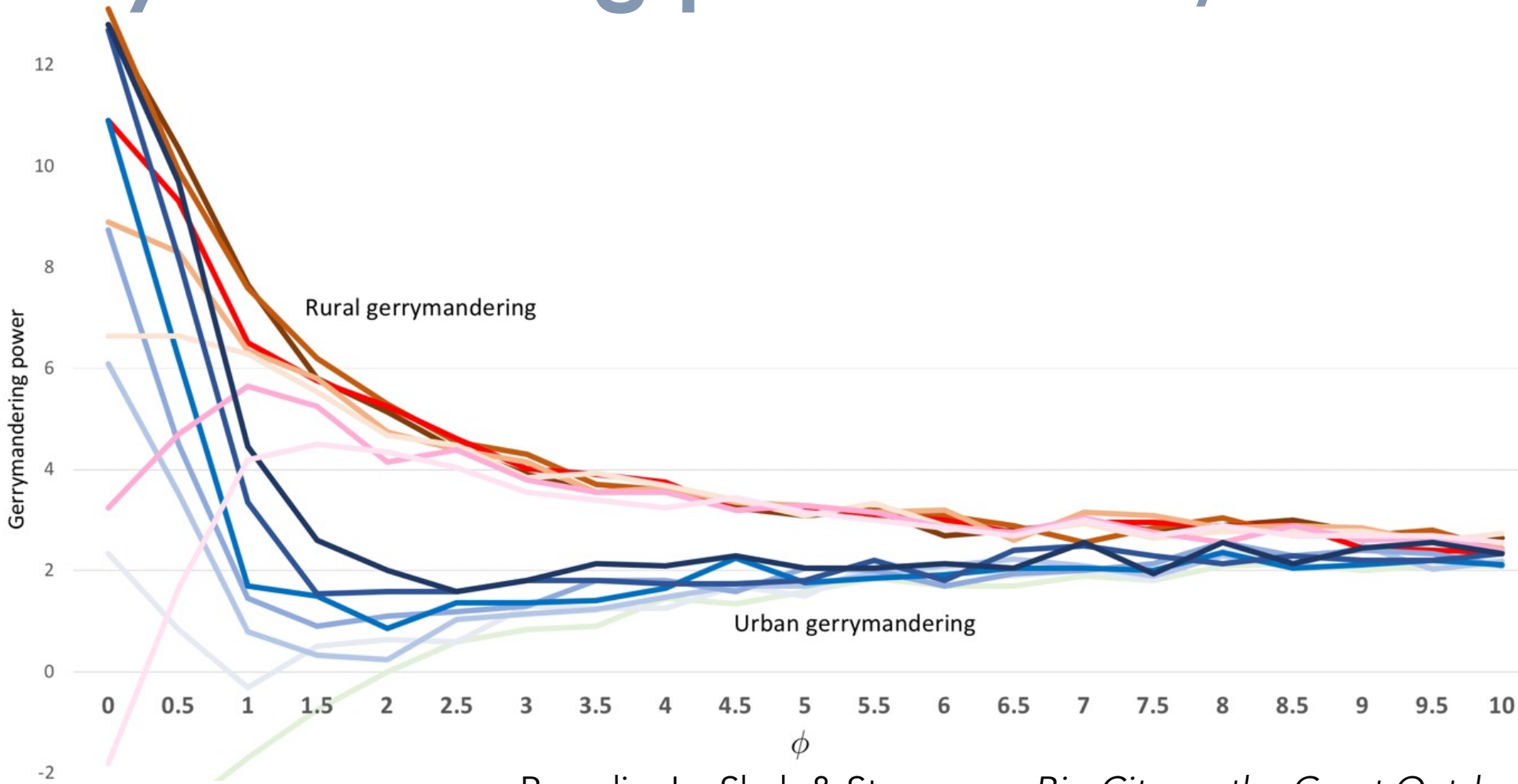
Some existing work on parties
Gerrymandering: red



Some existing work on parties
Gerrymandering: blue



Some existing work on parties
Gerrymandering power: rural/urban



Borodin, L., Shah & Strangway, *Big City vs. the Great Outdoors: Voter Distribution and How it Affects Gerrymandering* , IJCAI 2018

Executive capacity

How can we talk about decision stability?

Cooperative game theory

Hedonic games

Multi-winner elections

Executive capacity
Intuition

If voters slightly shifted their views, the same outcome would be reached

Formalized using ideological metric spaces and ε movements of voters

What else?

Effects on different voting rules

Axiomatic approach

Mechanism design

Beyond bounds

Combination with Cooperative GT
+ Hedonic games

The End

By preserving the method of nature in the conduct of the state,
in what we improve we are never wholly new;
in what we retain we are never wholly obsolete

Edmund Burke, *Reflections on the Revolution in France*, 1790