Lexicographic Voting and Party Positioning Across Multiple Elections

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Some Motivating Questions

- How can a political party win electoral majorities by taking minority positions on every issue?
- How can a party win reelection despite worsening conditions over its time in power? Or defeat an incumbent party despite improving conditions while the incumbent party has been in power?
- How can parties swap electoral constituencies over multiple elections?
- What happens at the aggregate level when individual voters adopt *noncompensatory* (i.e. *lexicographic*) choice methods, as suggested by behavioral decision models?

Noncompensatory Choice Rules

A number of behavioral models of individual decision making suggest that people often make choices in a "noncompensatory" manner.

> *A decision rule is noncompensatory if the outcome it chooses is insensitive to variables that change the utility of the outcome, i.e. the rule at least sometimes ignores or weights such variables so that no values they might assume could affect the decision.*

Examples include:

- Satisficing. Choose the first alternative that passes some threshold, independent of whether other alternatives would yield higher utility (Simon, 1955).
- Elimination by Aspects (EBA). Step through dimensions along which options differ, from most to least important, eliminating those that do not pass a preset threshold on each dimension until only one alternative remains (Tversky, 1972).
- **Lexical Choice Rule (LCR). Compare alternatives along an ordered set of dimensions, "with the choice between any alternatives being made on the first dimension on which they differ (Wissel, 1973).**
- Priority Heuristic. Application of LCR to standard gambles (Brandstatter, Gigerenzer, & Hertwig, 2006).

Social choice: Majority, plurality, and runoff rules are noncompensatory. Borda and total utility rules are not.

Choice-Preference Consistency

We can distinguish different types of choice-preference consistency for issue-based voting:

- **(Weak) Majoritarian Consistency (MC*).** If X and Y are parties, and X is chosen over Y by a majority in an election, then Y's issue positions should not all be preferred to X's by a majority of voters.
- **Individual Consistency (IC).** If a voter chooses party X over party Y, then that voter should not prefer Y's platform over X's.
- **Group Consistency (GC).** If X is chosen over Y in an election, then the voters should not collectively prefer Y's platform over X's.

Consistency Violations

Ex 2.1.1. MC*. Consider the following lexicographic priority profile for isssues A and T and positions + (favor) and – (oppose):

Voter 1	Voter 2	Voter 3
A-	T-	A+
T+	A+	T+

Imagine also that there are two parties whose platforms are the following:

L: A+T+
R: A-T-

Thus, a majority prefers A+ to A-, and T+ to T-. But if the voters apply LCR, they will elect R with platform A-T- over L with platform A+T+, even though A+ and T+ both have majority support. Thus a noncompensatory rule can violate MC*, as well as transitivity.

Ex 2.2.1. IC. Consider a single voter who votes according to a lexicographic choice rule applied to the following additive utilities:

Positions	Voter's Utilities
A+	4
T+	3
Z+	3
A-	0
T-	0
Z-	0

Using an LCR, the above voter will vote for a party with platform A+T-Z- over one with platform A-T+Z+, even though the latter platform provides higher total utility for the voter, violating IC.

Ex 2.2.2. GC. With these additive utilities (consistent with 2.1.1 above),

Positions	Voter 1	Voter 2	Voter 3
A+	0	3	7
T+	3	0	3
A-	7	0	0
T-	0	7	0

a noncompensatory (majority) social choice violates GC even when individual voters obey IC: Above, (U(A-T-)=14 but U(A+T+)=16).

Party Competition

Call the following model **LVDP** (Lexicographic Voting with Dynamic Platforms). Assume:

- two parties: X (first mover) and Y (second mover);
- a fixed set of M issues (e.g. A and T, with M=2) with positions specified for each issue;
- a static priority profile P specifying a full set of strict priorities over all M issues for an odd number N of voters, who vote using a lexicographic choice rule;
- each party's platform specifies a valence on each issue; and
- if platforms are identical, the party most recently switching to the platform loses (the "Johnny come lately" constraint).

A series of elections can be modeled as a dynamic game:

- in the first election: party X chooses a platform, and party Y chooses a platform in response, with the winner chosen by majority rule;
- in all subsequent elections, the incumbent party retains the same platform, but the opposition party may change platforms.

Prop 3.1.1. All priority profiles under model LVDP fall within exactly two equivalence classes, either:

- stable – one platform defeats all others (Black-Downs equivalence), or
- even – choosing any Nash strategy results in neither party winning more elections in the long run than the other (as in Ex 2.1.1 above).

Prop 3.1.3. All priority profiles under model LVDP, augmented by any party identity constraint restricting the number of issue positions that a party can change, from one election to the next, to some number in the set {1,...,M}, fall into either the stable or the even class.

Applications

- LCRs do very well in competition with compensatory models (e.g weighted and unweighted summation) in predicting human choice data (Gigerenzer & Selten, 2001, Brandstatter et al. 2006). For elections, data are observational, but a few studies suggest widespread use of LCRs and NCRs (Dutter, 1981; Williams et al., 1976; Bronner & De Hoog, 1981).
- Models based on Downsian assumptions and retrospective voting (e.g. Key, 1966; Bendor, Kumar, & Siegel, 2010) appear inadequate for explaining voting behavior in the U.S.
- If a substantial number of voters vote in a noncompensatory manner approximated by a lexical choice rule, this could help explain both how Republicans were able to win elections (e.g. in 2000 and 2004) while maintaining minority positions, and how their popularity could increase despite negative events happening while they controlled the government.
- Republican-Democrat base swapping between the 19th and late 20th Centuries is a pattern that intransitive cycling through party platforms across a series of elections, as in model LVDP, would predict: stability in the profile of the electorate, but instability in party positioning in the issue space, leading to mutable party identities over long time spans.