On Strategy-proofness and the Salience of Single-peakedness

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(Version July 10, 2015)

Abstract: We consider strategy-proof social choice functions operating on a rich domain of preference profiles. We show that if the social choice function satisfies in addition tops-onlyness, anonymity and unanimity then the preferences in the domain have to satisfy a variant of single-peakedness (referred to as semilattice single-peakedness). We do so by deriving from the social choice function an endogenous partial order (a semilattice) from which the notion of a semilattice single-peaked preference can be defined. We also provide a converse of this main finding. Finally, we show how well-known restricted domains under which nontrivial strategy-proof social choice functions are admissible are semilattice single-peaked domains. Our characterization of a semi-lattice single-peaked domain may be viewed as a converse to the Gibbard-Satterthwaite theorem.