# Group Control for Procedural Rules: Parameterized Complexity and Consecutive Domains

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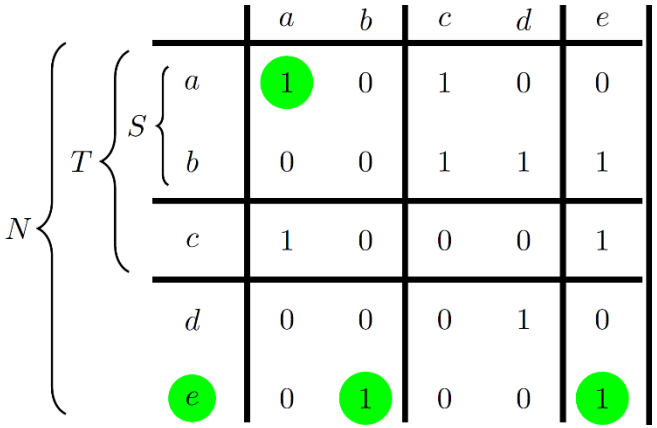
# Problems & Ideas

- Problem of Group Control by Adding Individuals (GCAI)

  Input: A set N of individuals, a profile δ over N, two nonempty subsets S, T of N such that S is a subset of T, and an integer k.

  Question: Is there a subset U of N\T of at most k individuals so that all individuals in S are socially qualified with respect to the profile δ restricted to the union of T and U?

- Ideas: Use complexity theory to establish the complexity of GCAI for two procedural rules.




An illustration of the problem of group control by adding individuals.

# Main Contributions

- Contributions:
  - We prove that GCAI for the two procedural rules are fixed-parameter tractable with respect to the number of distinguished individuals;
  - We prove that GCAI for the two procedural rules are W[2]-hard with respect to the solution size;
  - We study the complexity of GCAI for the consensus-start-respecting rule and the liberal-start-respecting rule restricted to consecutive domains.

| | parameters | | restricted domains | |
|---|---|---|---|---|
| | $\ell$ | $k$ | QC | DQC |
| $f^{\mathrm{CSR}}$ | FPT (Thm. 2) | W[2]-hard (Thm. 4) | P (Thm. 5) | P (Thm. 7) |
| $f^{\mathrm{LSR}}$ | FPT (Thm. 3) | W[2]-hard (Thm. 6) | W[2]-hard (Thm. 6) | P (Thm. 7) |

A summary of our main results.