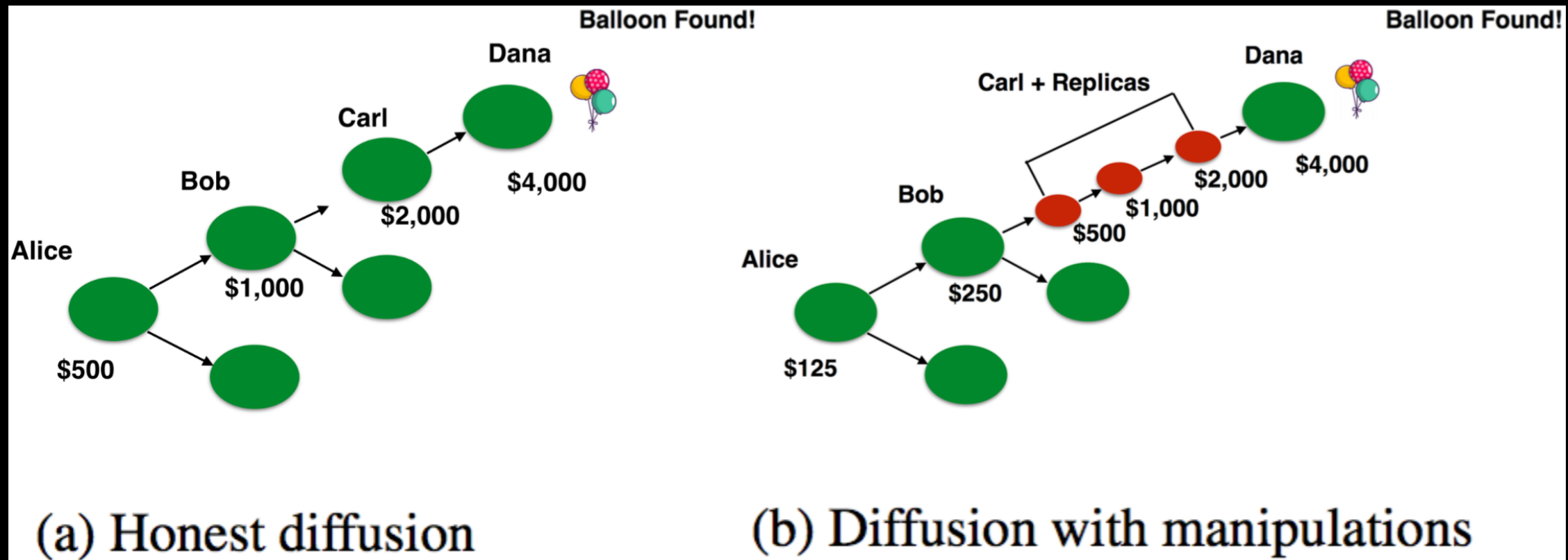# Multi-Winner Contests for Strategic Diffusion in Social Networks

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Strategic Diffusion in Social Networks

(a) Honest diffusion

(b) Diffusion with manipulations

- Setting: Consider a principal aims to solicit as many efforts as possible from users in a social network.

- Challenges:

  - False-name attacks

  - Incentives for low-influential players

  - Scalability

- Question: How should a principal design the incentive mechanisms to address the challenges?

Multi-Winner Contests

- Our solution:

  - Assign a positive number of credits to each player that has contributed task efforts and has made successful referrals.

  - Determine the diffusion rewards according to a ratio-form contest among players that are in the same subgraph.

  - Allocate the rewards proportionally.

- The MWC mechanism:

  - Satisfies desirable properties: false-name-proofness, individual rationality, budget constraint, monotonicity, and subgraph constraint.

  - Can be applied to large graphs with tens of thousands of nodes.