Symmetric Nets with Bags

Introduction

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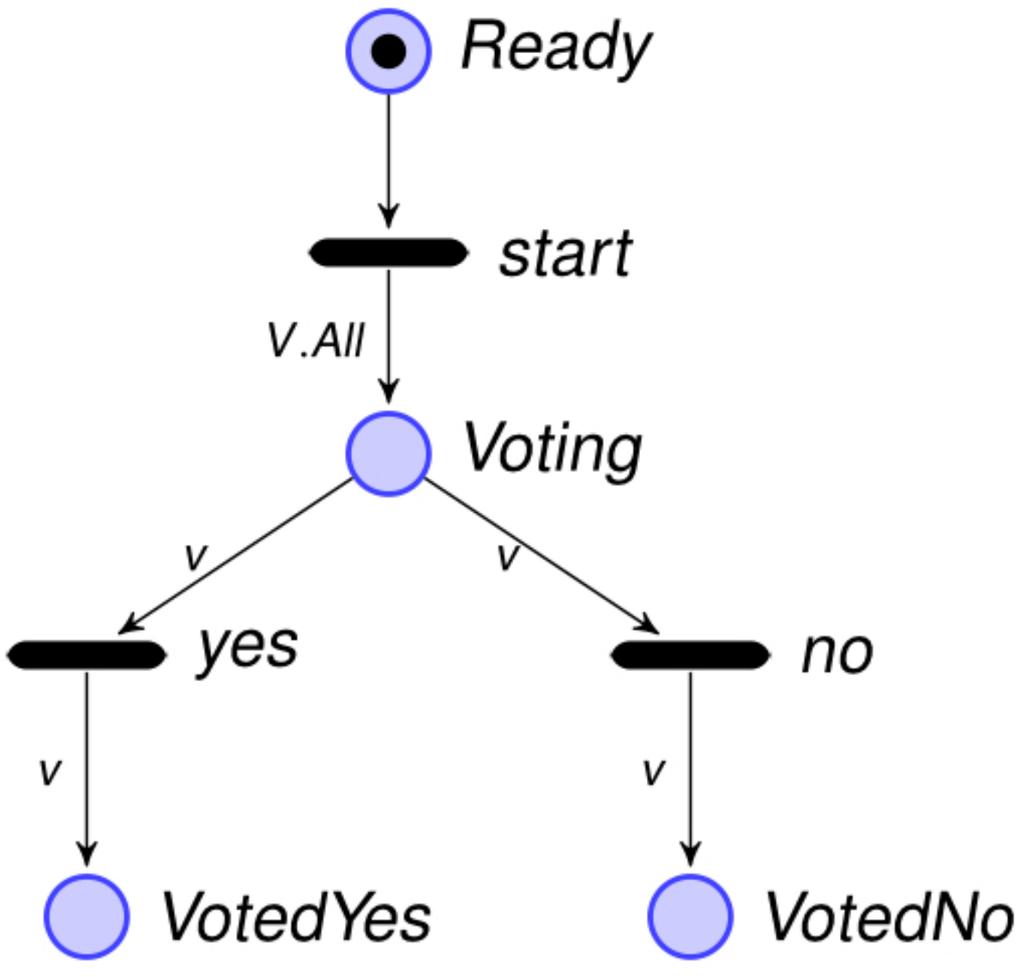
SNB (B=bags) bring a solution to these problems

- Suppression of spurious intermediate states
- Possibility to associate items as bags themselves
- Models are even more compact and parametrisable than with SNs

The voting system example (1/2)

$V = \{v_1, \ldots, v_n\}$
$v \in V$



Voting machine example

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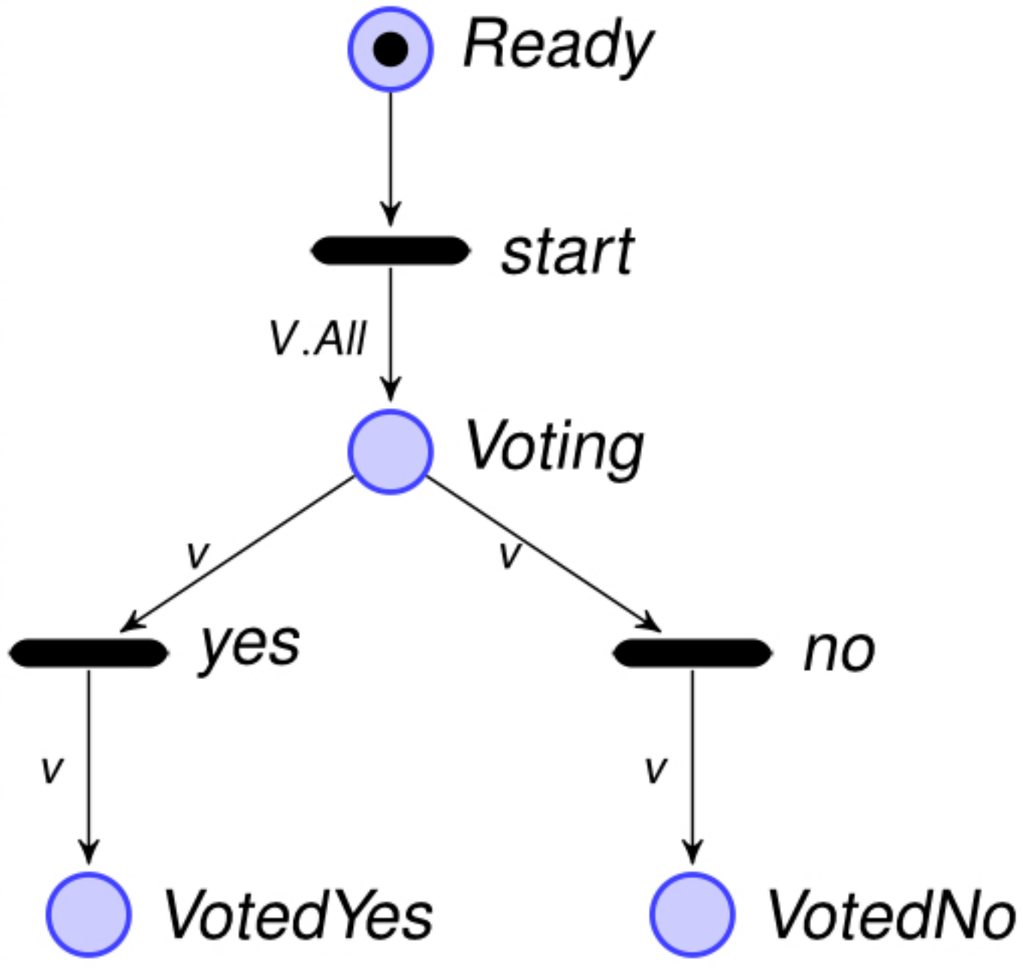

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- Reachability graph shows all possible votes

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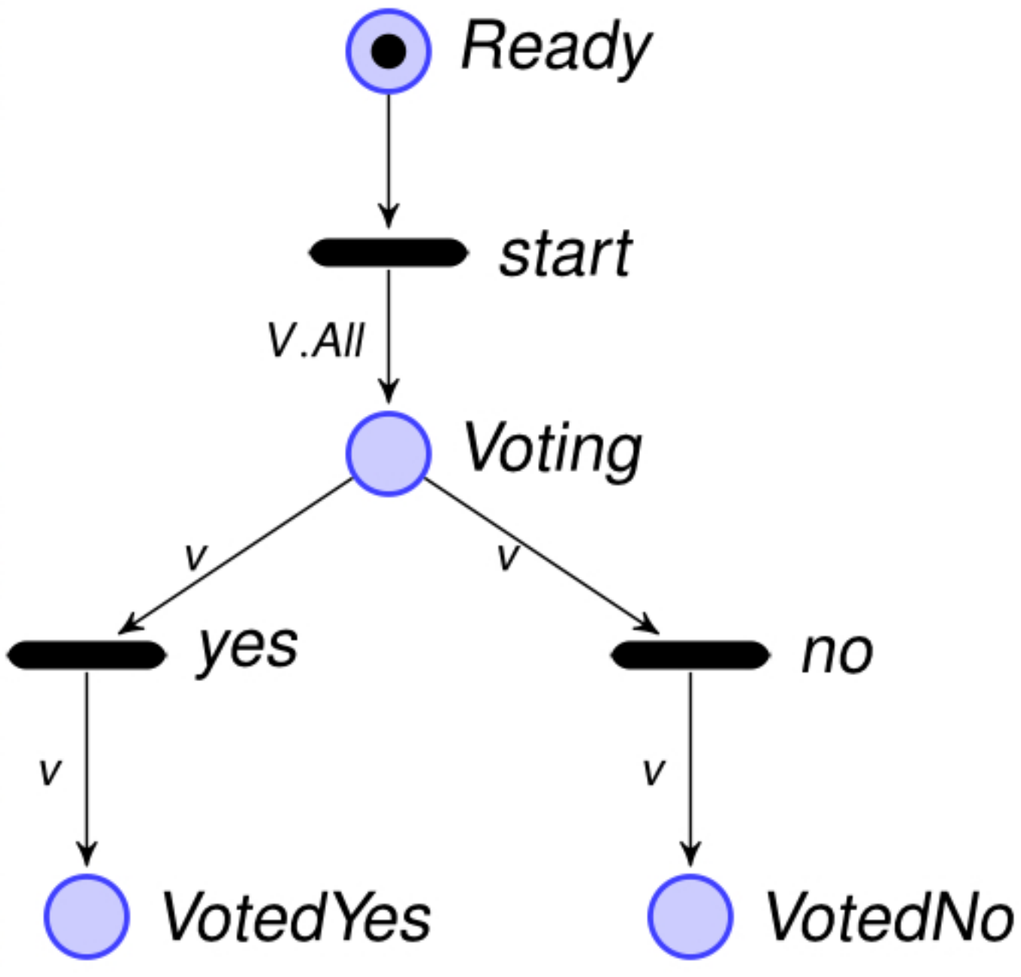

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- High complexity:
  - $3^{|V|} + 1$ states
  - $\binom{|V|+2}{2} + 1$ symbolic states

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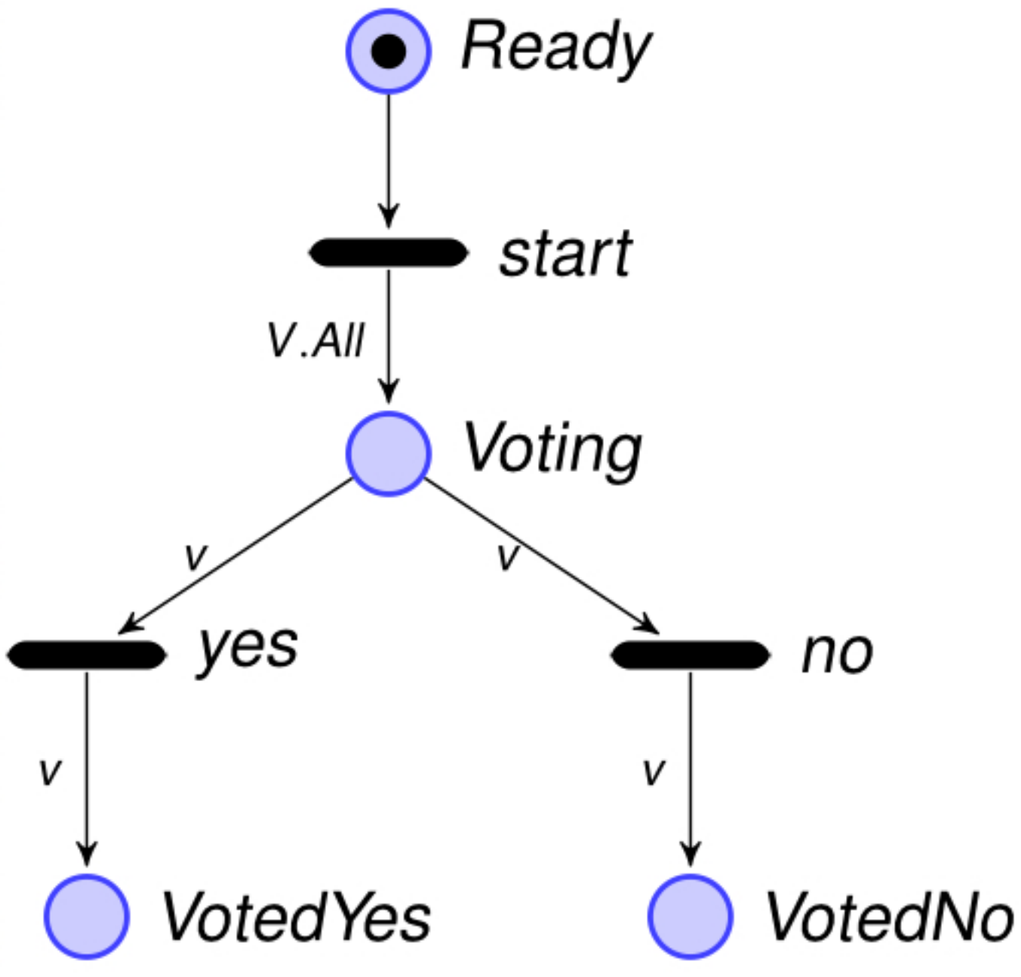

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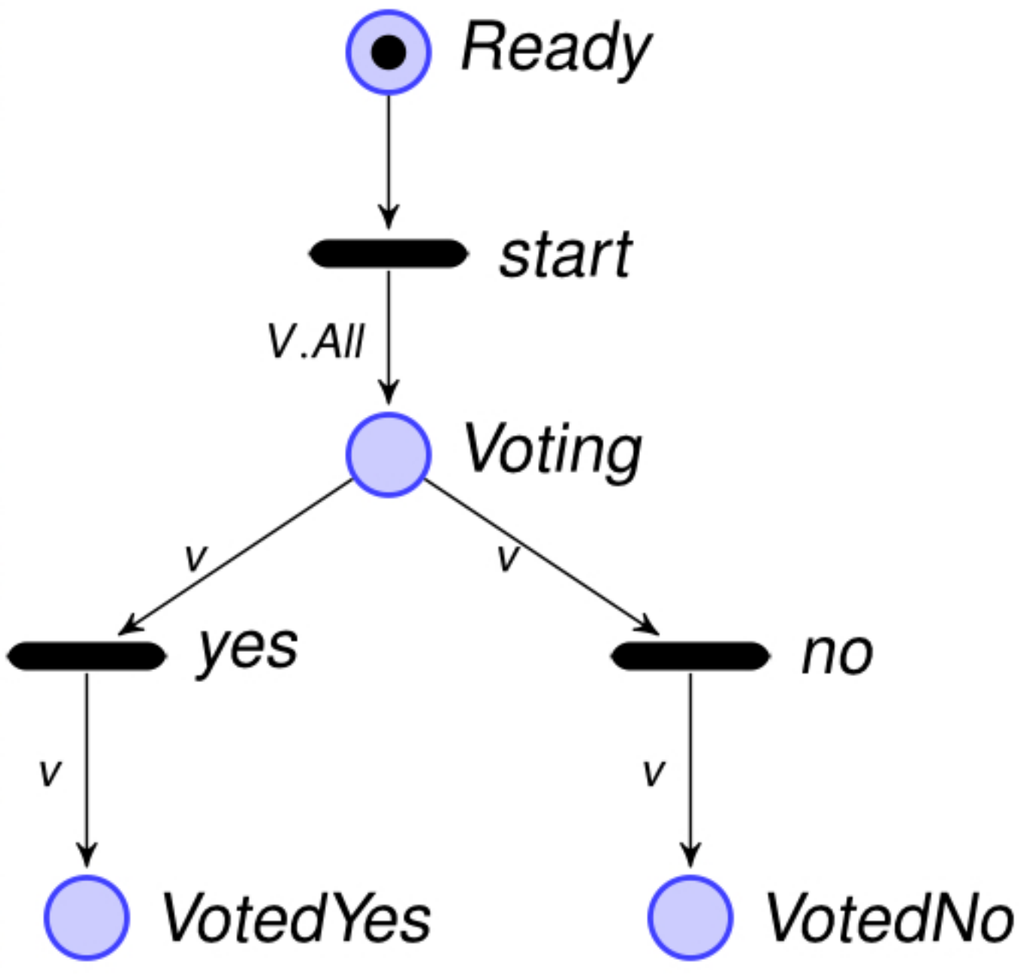

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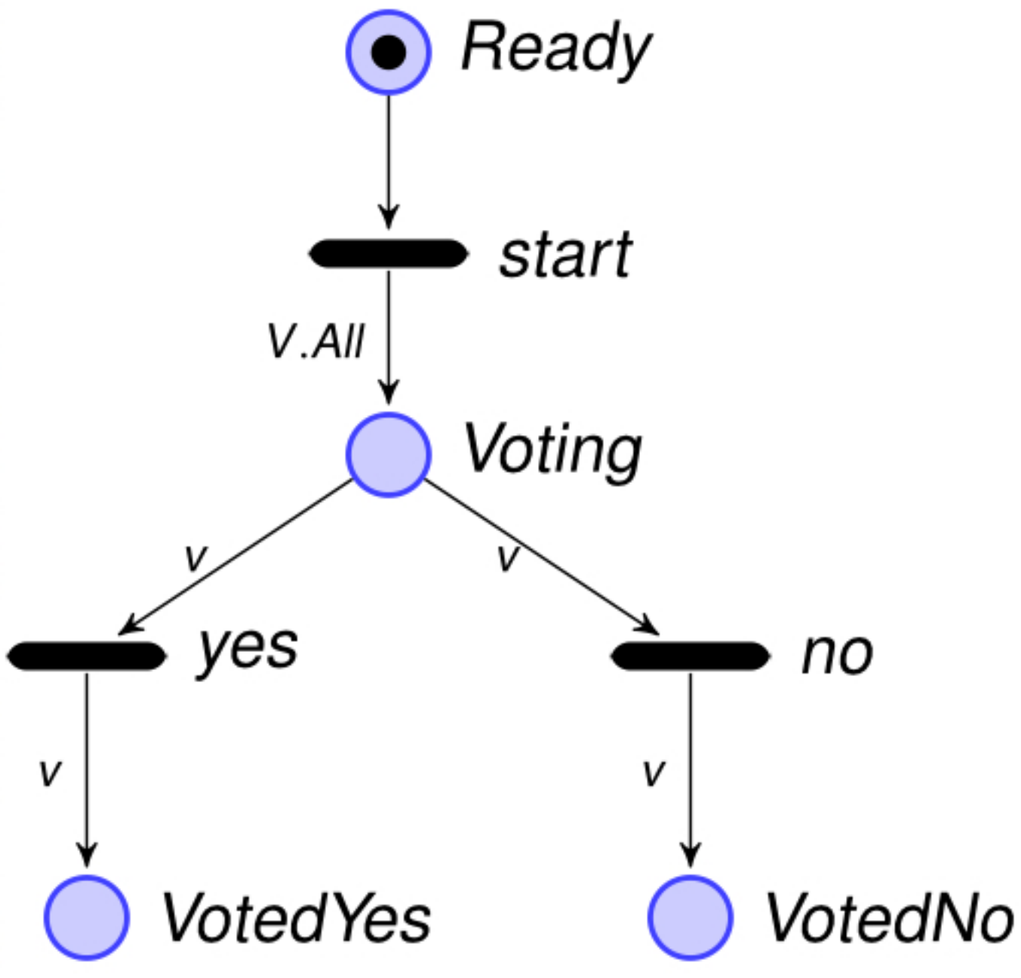

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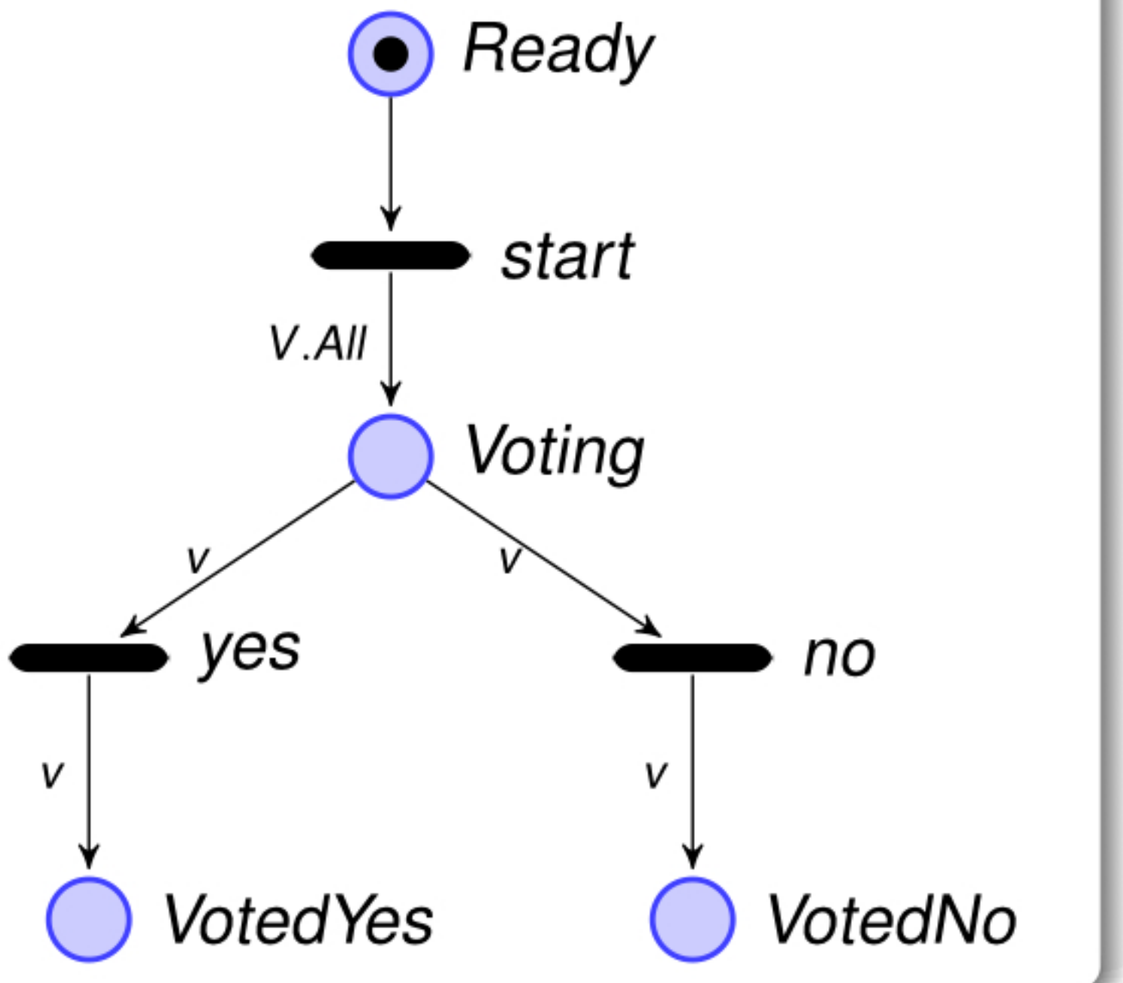
Incurring problems

- $\mathcal{P}(|V|)$ possible vote results
- no symbolic firing to produce all possible votes:
  - Vote categories cannot be computed symbolically
  - Limit of Symmetric Nets

The voting system example (2/2)

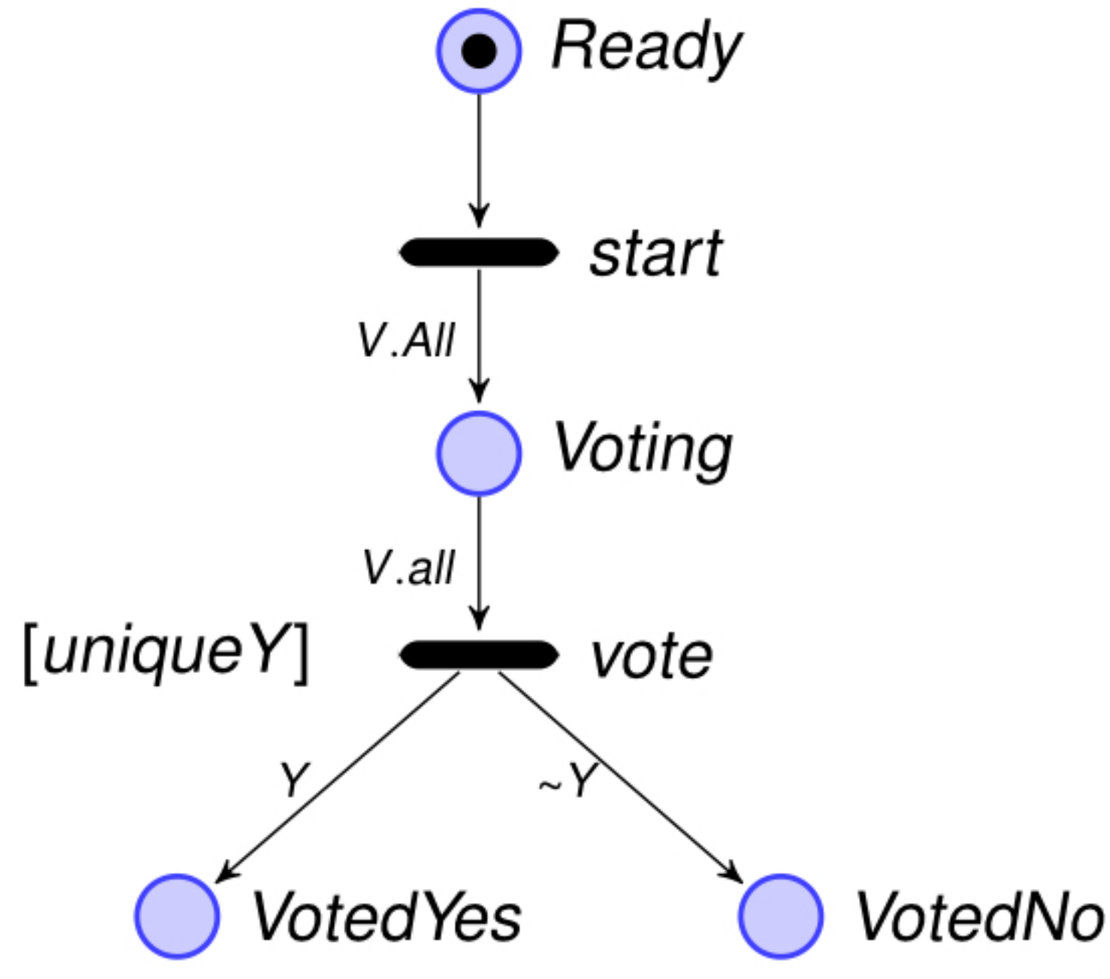
Symmetric Net Model

$V = \{v_1, \ldots, v_n\}$
$v \in V$



Symmetric Net with Bags Model

$V = \{v_1, \ldots, v_n\}$
$Y \in Bag(V)$



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- you have seen a basic illustration of SNBs
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Let's present the functions manipulated in SNBs and the firing rule (next sequence)