

# Why 50 Positions Remain Unknown

## L=17 ONE-TO-ONE MAPPING PROPERTY

With L=17 and 97 positions:

- Each position  $i$  maps to unique  $(\text{class}(i), i \bmod 17)$
- Total unique slots = 97 (no reuse)
- Each constraint determines exactly 1 position

## CONSTRAINT ACCOUNTING:

- 4 anchor cribs: 24 positions
- Canonical tail: 23 positions
- Total constrained: 47 positions
- Remaining:  $97 - 47 = 50$  positions

## MATHEMATICAL NECESSITY:

Under 1-to-1 mapping, no constraint propagation occurs.

Each unknown position requires its own constraint.

Therefore: Minimum additional constraints = 50

## EXAMPLE ARITHMETIC (Position 81):

- Class =  $((81 \% 2) * 3) + (81 \% 3) = 3$
- Slot =  $81 \% 17 = 13$
- No other position maps to (class 3, slot 13)
- Must be directly constrained to determine

Slot Usage Pattern (Class × Slot)

