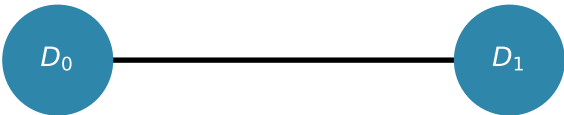


Genesis Chain: The Forced Emergence of K_4

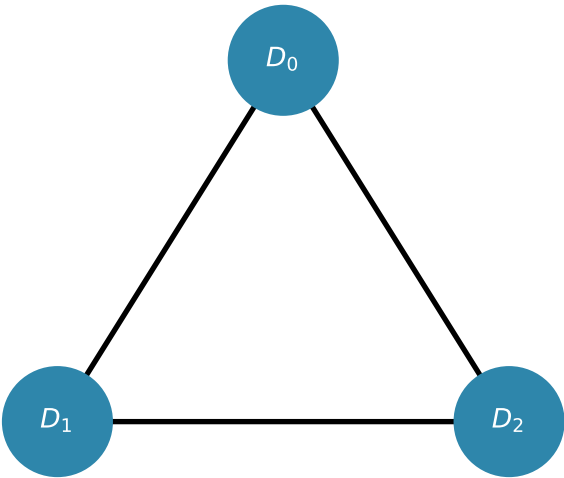
Step 0: D_0



Step 1: $D_0 \rightarrow D_1$

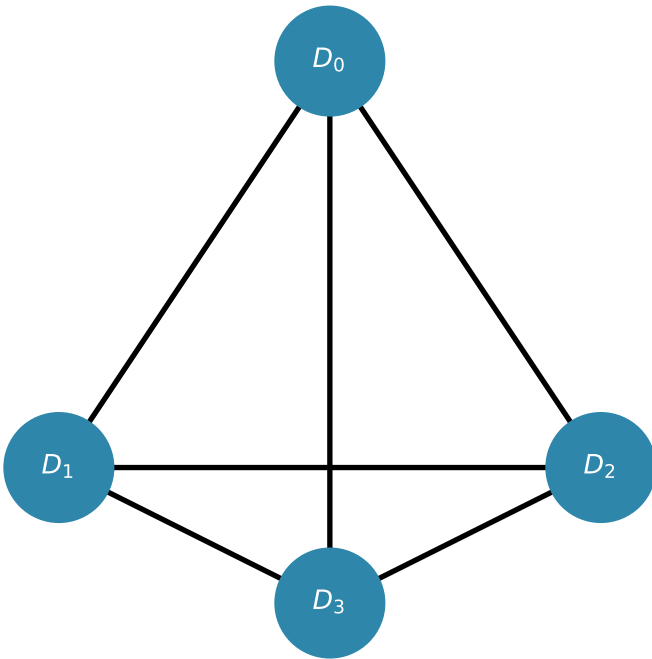


Step 2: + D_2



Distinction exists

Step 3: + D_3



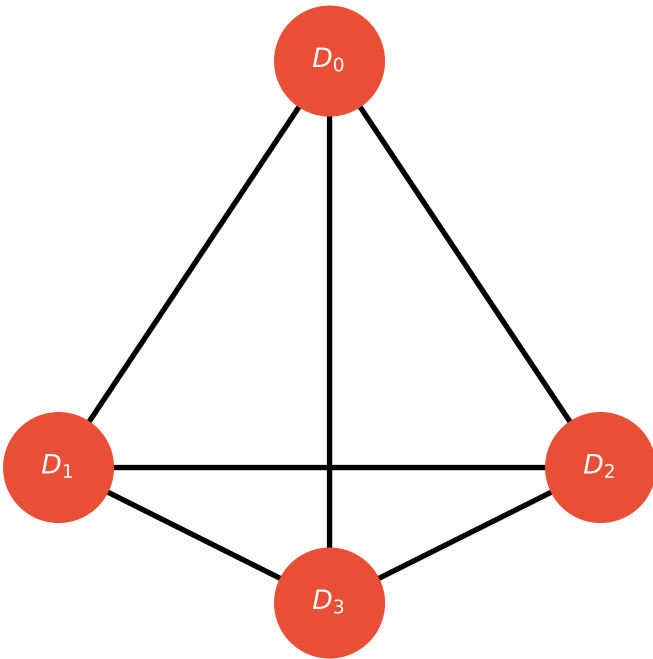
Closure

memory = 6

D_0 vs not- D_0

K_4 Complete

memory = 1



memory = edges = 6

memory = 6

Witness of difference

memory = 3

WHY K_4 IS FORCED

At each step, a new distinction
is REQUIRED for closure:

- D_0 : Something exists
- D_1 : D_0 differs from not- D_0
- D_2 : Witnesses (D_0 , D_1) pair
- D_3 : Witnesses (D_0 , D_2) pair

At $n=4$: SATURATED

Every pair (D_i , D_j) has witnesses
among the remaining two.

memory(4) = 6 = edges(K_4)

K_4 is not chosen. It is NECESSARY.