The diagram shows a chain: $x_0 \to$ NN, C_0, PS $\to x_1 \to$ NN, C_1, PS $\to x_2 \to$ NN, C_2, PS $\to x_3 \to$ NN, C_3, PS $\to x_4, x^* \} L$

→ TS = 1

original: $\dfrac{dL}{dx_1} \cdot \dfrac{dx_1}{dc_0} \cdot \dfrac{dc_0}{d\theta}$

detached: $\dfrac{dL}{dx_1} \dfrac{dx_1}{dc_0} \dfrac{dc_0}{d\theta}$

→ TS = 2

original: $\dfrac{dL}{dx_2}\left(\dfrac{dx_2}{dc_1}\dfrac{dc_1}{d\theta} + \dfrac{dx_1}{dc_0}\dfrac{dc_0}{d\theta}\left[\dfrac{dx_2}{dx_1} + \dfrac{dx_2}{dc_1}\dfrac{dc_1}{dx_1} \right] \right)$

detached: $\dfrac{dL}{dx_2}\left(\dfrac{dx_2}{dc_1}\dfrac{dc_1}{d\theta} + \dfrac{dx_2}{dx_1}\dfrac{dx_1}{dc_0}\dfrac{dc_0}{d\theta} \right)$

→ TS = 3

original: $\dfrac{dL}{dx_3}\left(\dfrac{dx_3}{dc_2}\dfrac{dc_2}{d\theta} + \dfrac{dx_2}{dc_1}\dfrac{dc_1}{d\theta}\left[\dfrac{dx_3}{dx_2} + \dfrac{dx_3}{dc_2}\dfrac{dc_2}{dx_2} \right] + \dfrac{dx_1}{dc_0}\dfrac{dc_0}{d\theta}\left[\left(\dfrac{dx_2}{dc_1}\dfrac{dc_1}{dx_1} + \right.\right.\right.$

$\left.\left.\left. \dfrac{dx_2}{dx_1}\right)\left(\dfrac{dx_3}{dc_2}\cdot\dfrac{dc_2}{dx_2} + \dfrac{dx_3}{dx_2} \right) \right] \right)$

detached: $\dfrac{dL}{dx_3}\left(\dfrac{dx_3}{dc_2}\dfrac{dc_2}{d\theta} + \dfrac{dx_3}{dx_2}\dfrac{dx_2}{dc_1}\dfrac{dc_1}{d\theta} + \dfrac{dx_3}{dx_2}\dfrac{dx_2}{dx_1}\dfrac{dx_1}{dc_0}\dfrac{dc_0}{d\theta} \right)$

→ Parts:

$\dfrac{dL}{dx_t}$, $\dfrac{dx_n}{dc_{n-1}}$, $\dfrac{dc_n}{d\theta}$, $\underbrace{\dfrac{dx_n}{dx_{n-1}}}_{PS}$, $\underbrace{\dfrac{dc_n}{dx_n}}_{NN}$

$\quad\quad$ (A) $\quad\quad$ (B) $\quad\quad$ (C) $\quad\quad$ (D)

The small diagram shows: $x_n \to$ D, NN with ↑B, C_n, ↑A, PS $\to x_{n+1}$

→ Detached:

d-detached = 0

for m=0 to ts-1:

    term = $A_m \times B_m$

    for k = m+1 to ts-1:

        term = term $\times$ C_k

    d-detached $\pm$ term

d-detached $x = dL/dx_{ts}$

→ Original:

```
def compute-path (step):
    if step==0:
        return Ao x Bo

    direct = An + Bn
    prev- paths = compute-path (step-1)
    State- effect = Cn + An x Dn

    return direct + prev-paths x state-effect
```

d-original = compute-path(ts-1) $\times$ dL/dxts