

# **AMNESIAC**

# **Amnesic Automatic Computer**

Ulya R. Karpuzcu  
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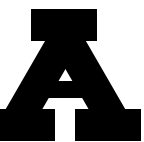
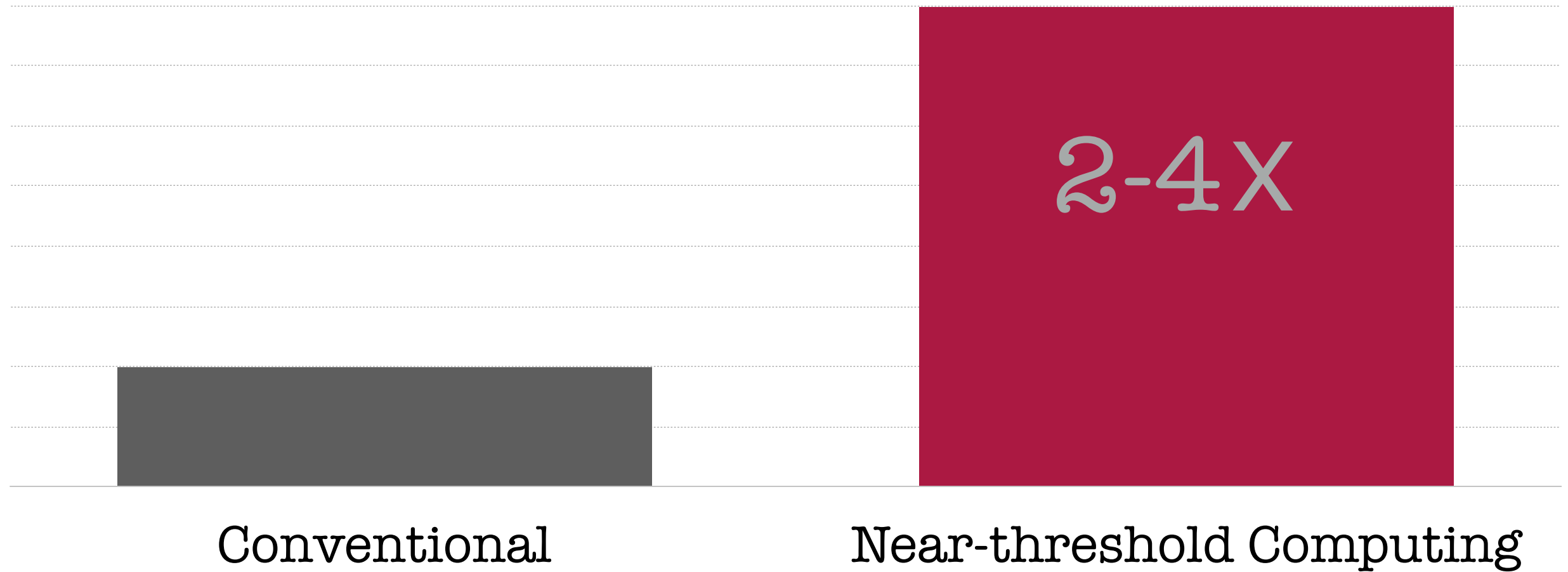
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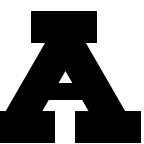
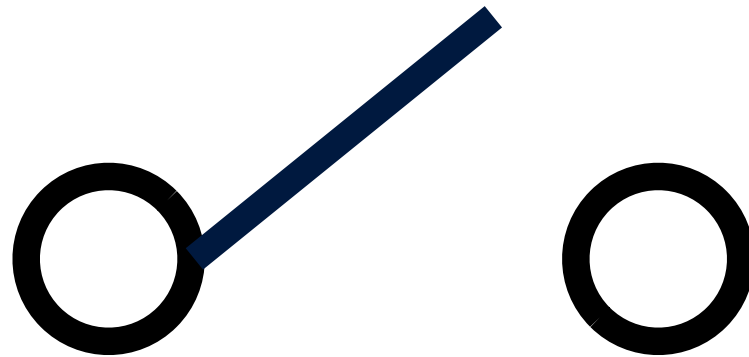
# Energy Efficiency



Power Consumption = Switching + Static

Near-threshold: Static power becomes dominant

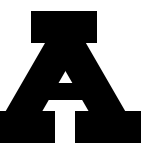
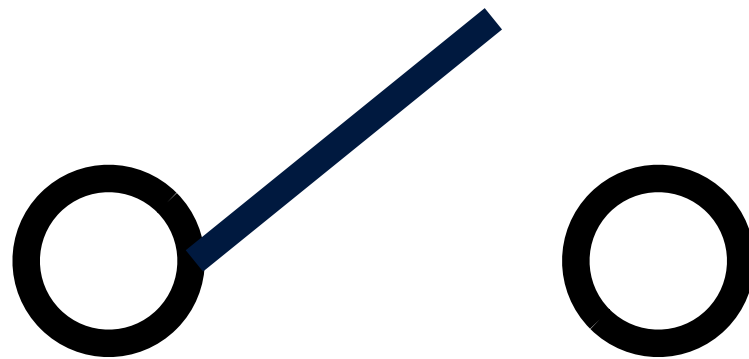
**Switching** becomes cheaper than  
**anything static-power-hungry**



Power Consumption = Switching + Static

Near-threshold: Static power becomes dominant

**(Re)computing** becomes cheaper than  
**memorization**

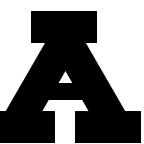


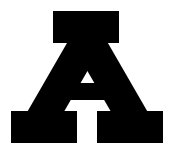
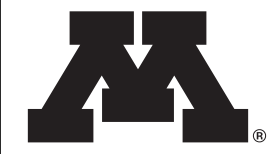
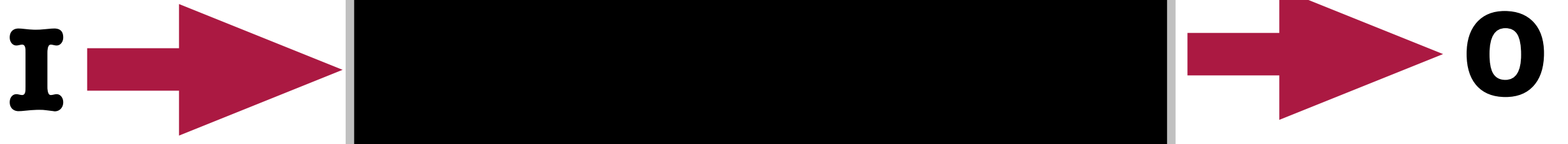
amnesia |am'nēZHə|

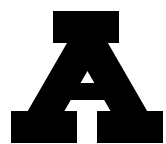
noun

a partial or total loss of memory.

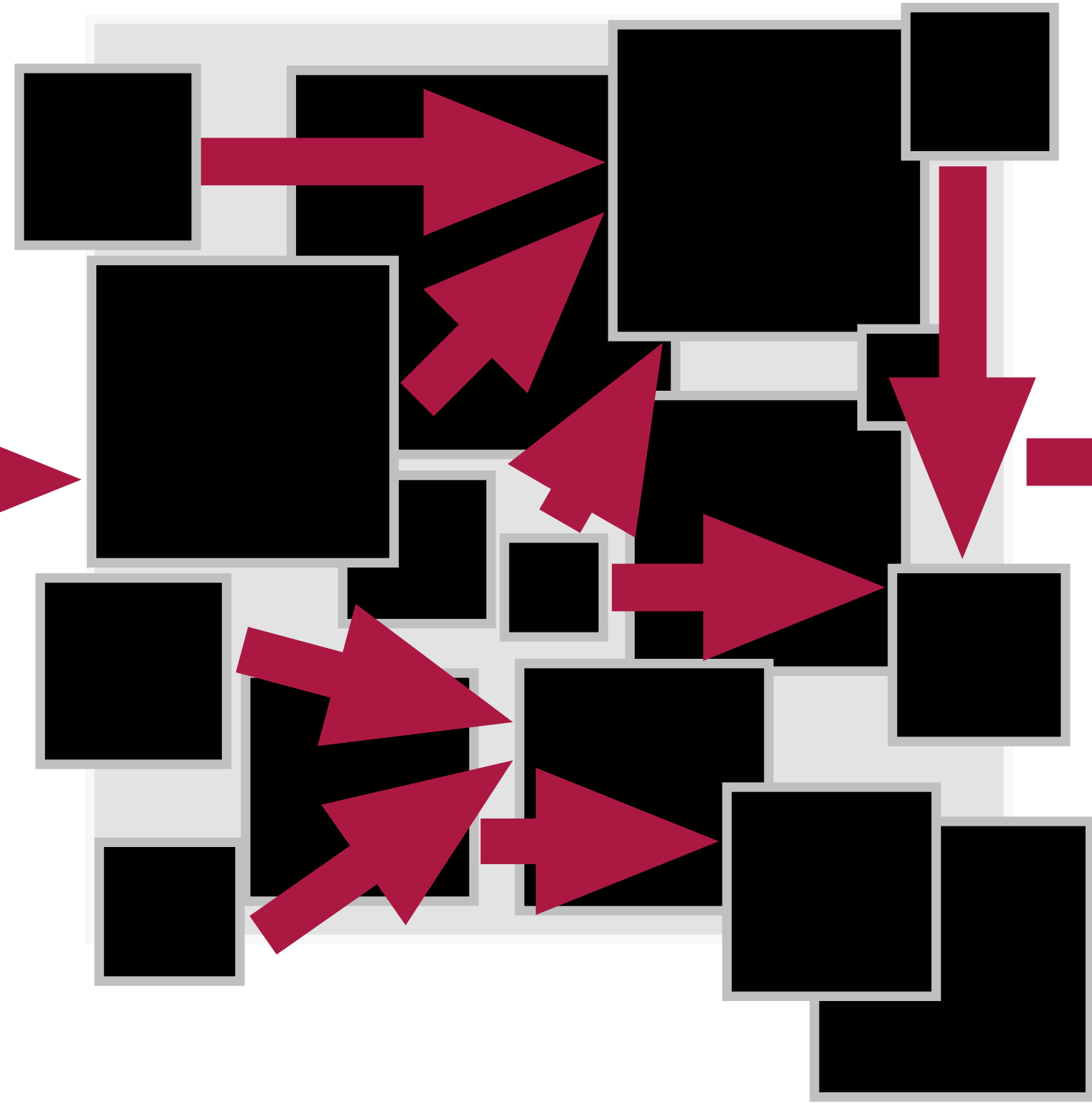
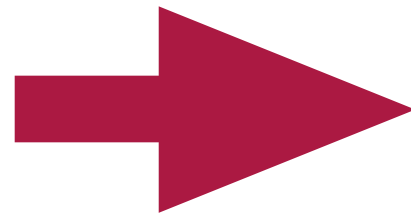
ORIGIN late 18th cent.: from Greek **amnēsia** 'forgetfulness.'



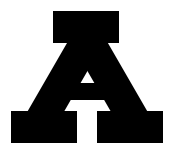
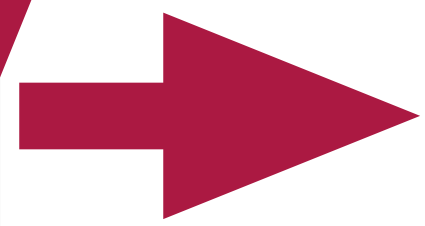




**I**

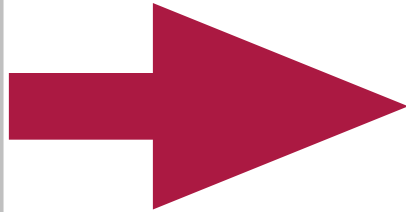
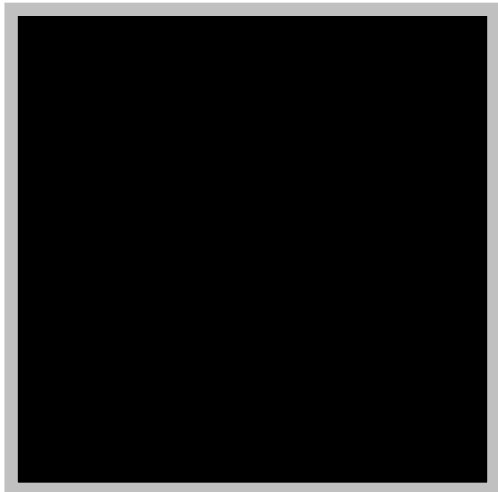
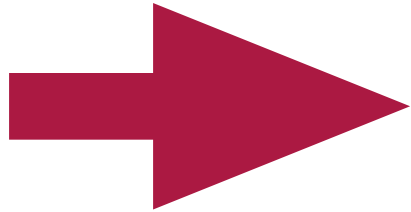


**O**

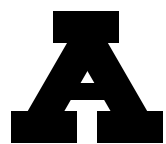




Memorized?

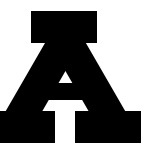


Memorize?



**Recompute**

**Memorize & Retrieve**



**Recompute**

Recompute Recompute Recompute

**Memorize & Retrieve**

Recompute Recompute Recompute



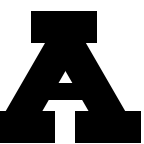


amnesia |am'nēZHə|

noun

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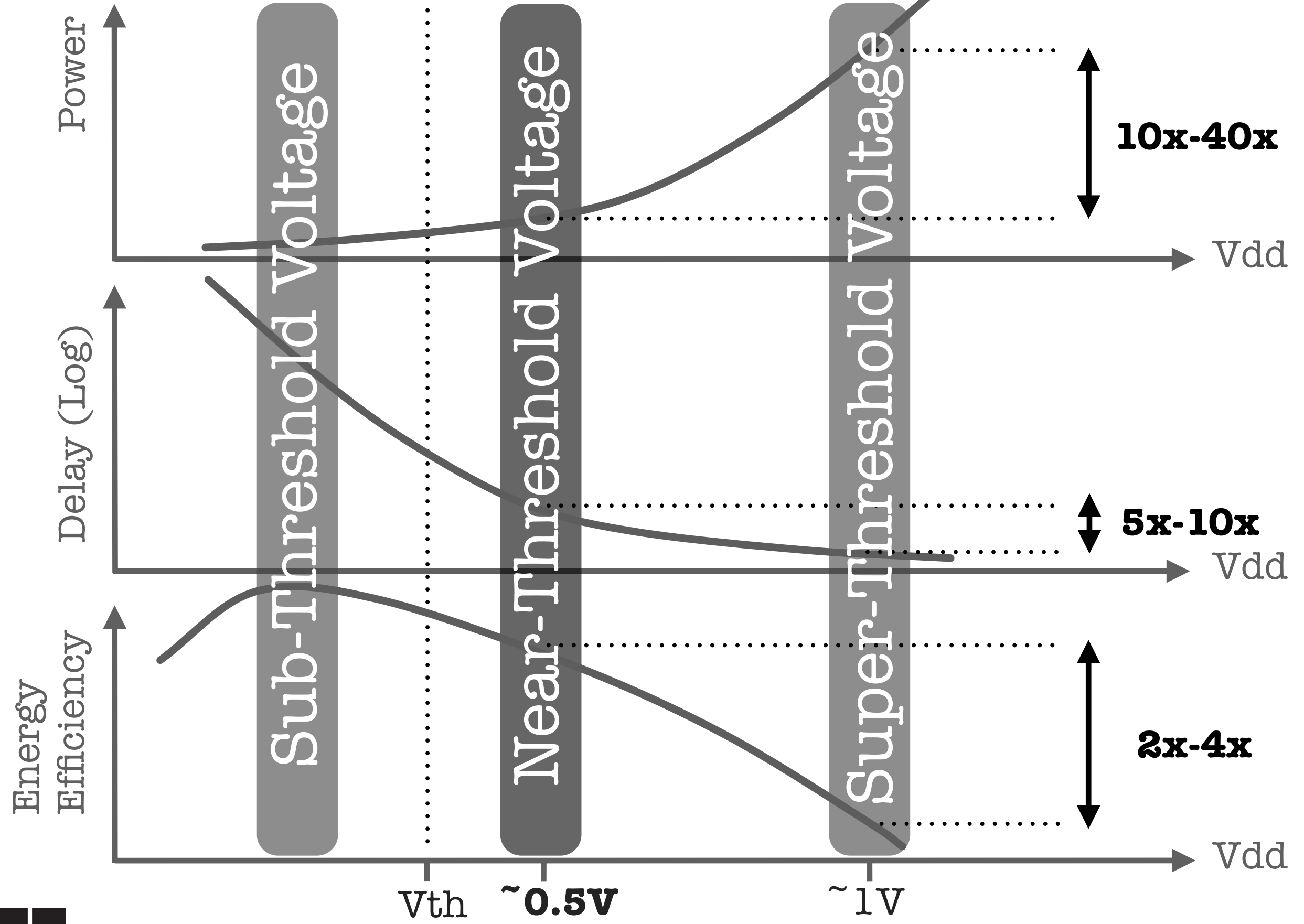
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$V_{dd_{SubTV}}$   **$V_{dd_{NTV}}$**   $V_{dd_{STV}}$



$V_{th}$   $\sim 0.5V$   $\sim 1V$

