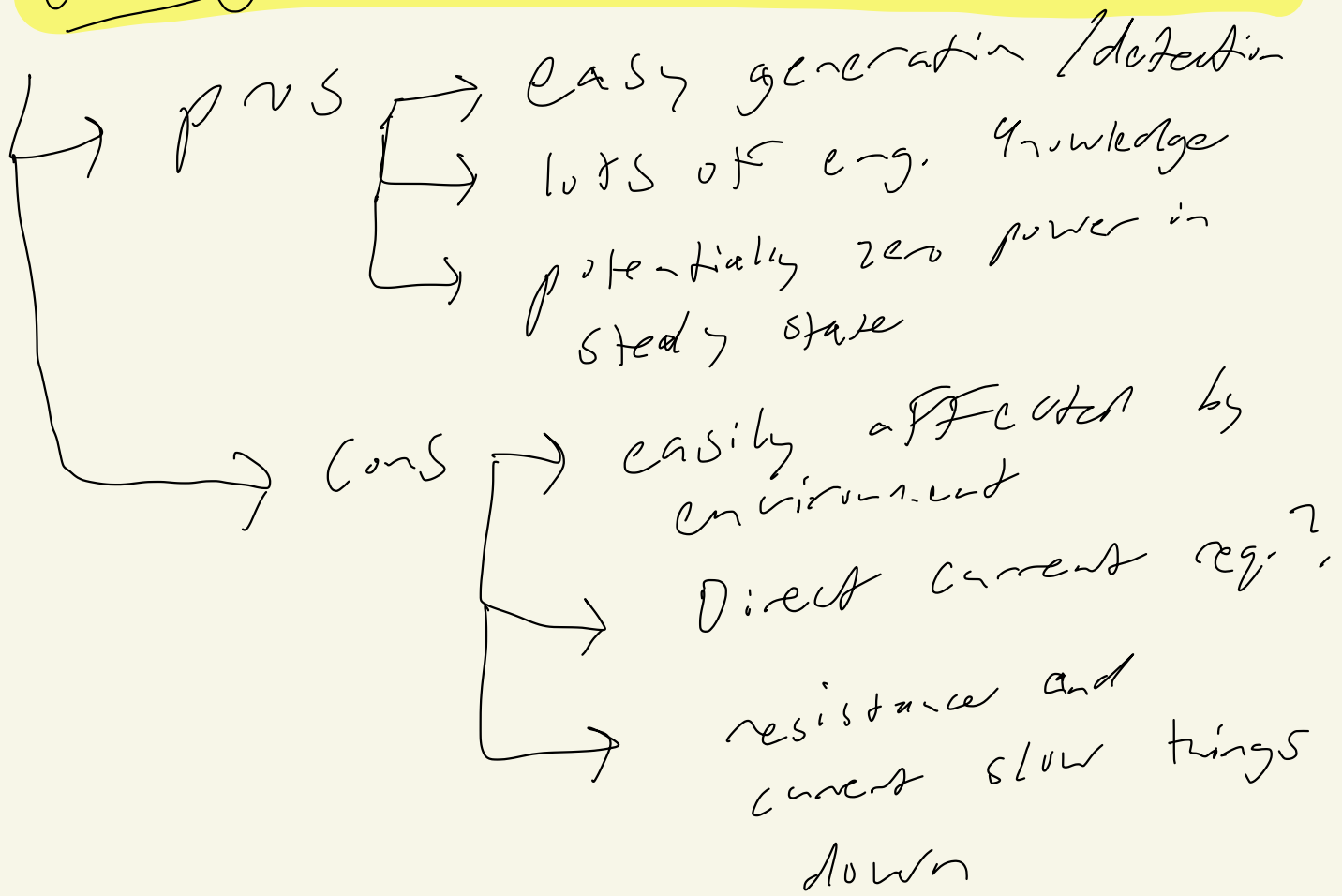


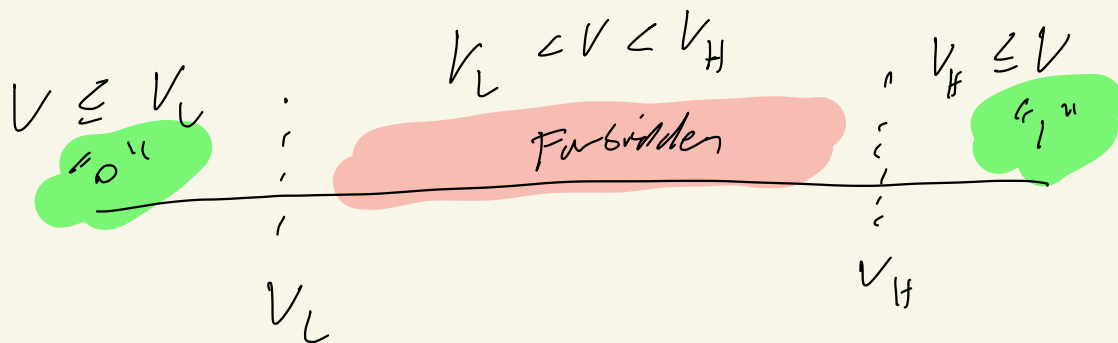
CH2 - Digital Abstraction



Using Voltages to Encode Into



Using Volts Digitally



Combinational Device

- one or more digital inputs
- one or more digital outputs
- functional specification
 - ↳ value of each output per input
- timing specification
 - ↳ an upper bound t_{po} on the req time for the device to compute output values from an arbitrary set of stable, valid inputs

Combinational Digital System

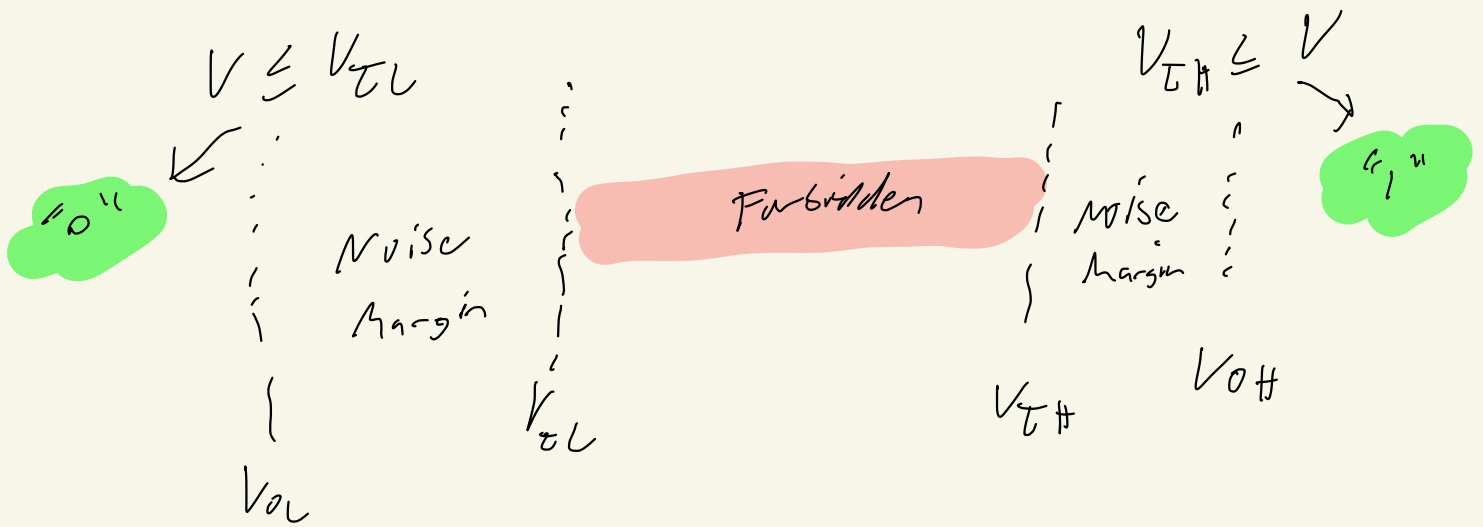
- ↳ a set of interconnected elements is a combinational device if:
 - ↳ each circuit elem is comb.
 - ↳ every input has an output
 - ↳ no directed cycles

Noise

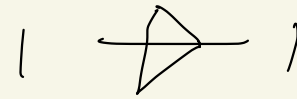
- error induced by:

- environmental factors
- circuit changes
- manufacturing imprecision

Noise Margin



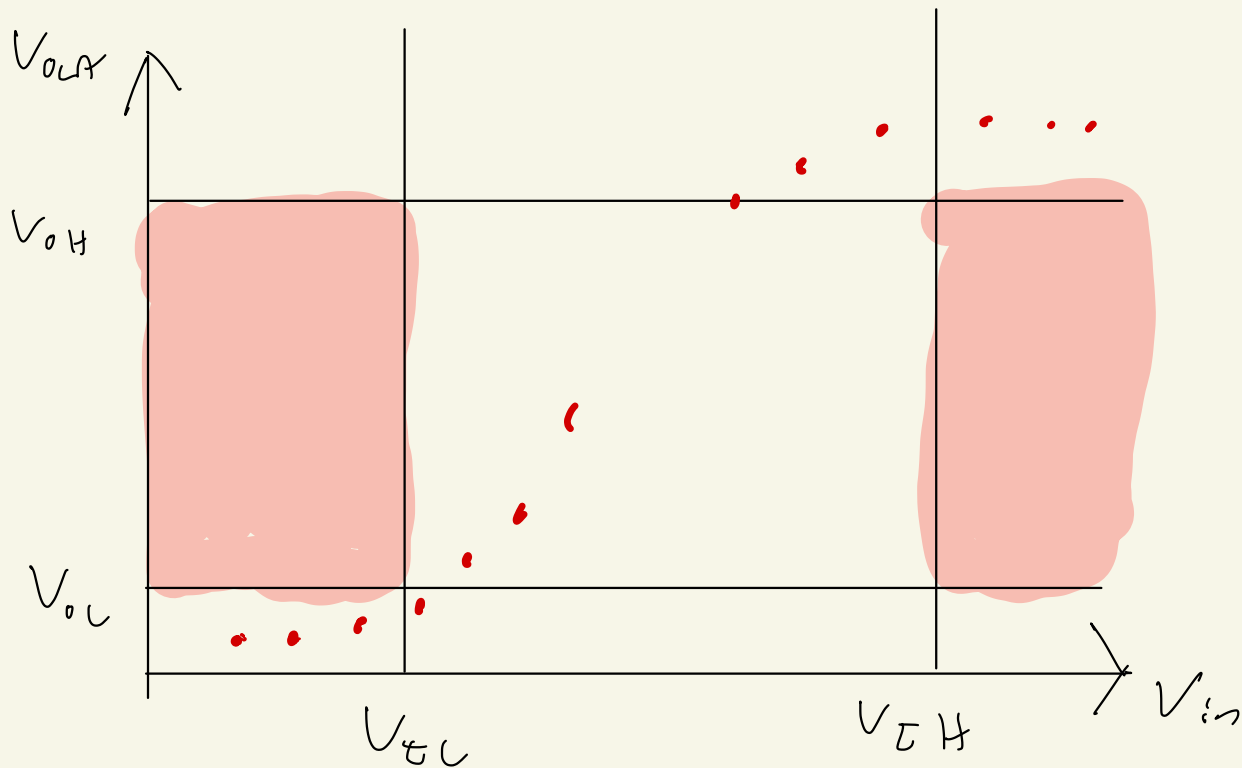
Buffer; Simple Comb Dev



Voltage Transfer Characteristic (VTC)

↳ Plot of V_{out} vs V_{in}

↳ measures static behavior



* Comb devices must have:

- ↳ Gain > 1
- ↳ non-linear