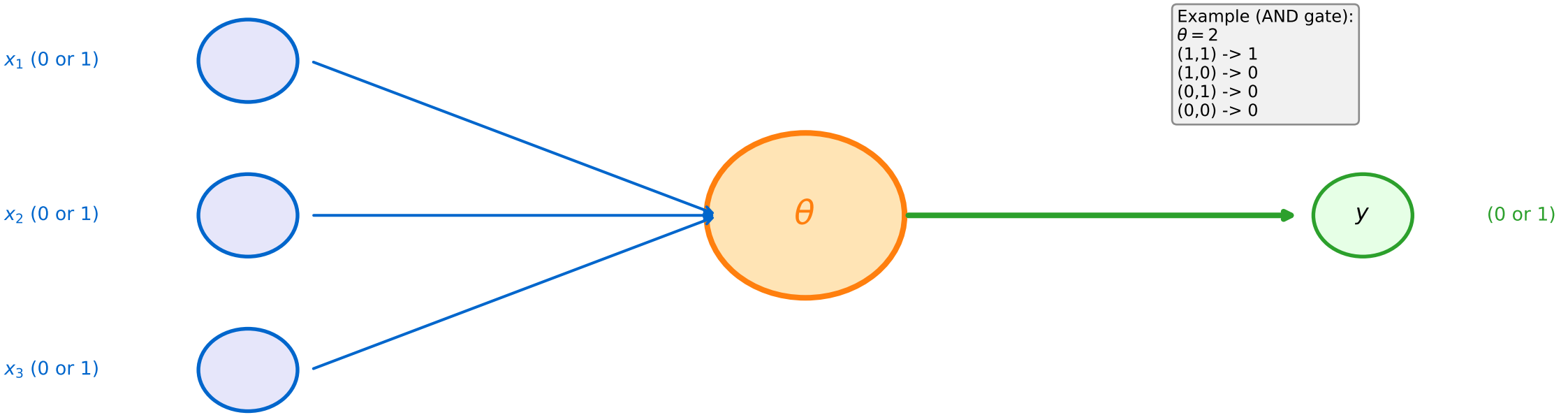
McCulloch-Pitts Neuron (1943): Binary Threshold Logic



McCulloch-Pitts Rule:

$y = 1$ if $\sum x_i \geq \theta$

$y = 0$ otherwise

Key Properties:

- All inputs are binary (0 or 1)
- All weights are equal (=1)
- Single threshold parameter
- No learning (fixed weights)

Warren McCulloch and Walter Pitts: "A Logical Calculus of Ideas Immanent in Nervous Activity" (1943)