Lateral inhibition
Truth 3:

Lateral inhibition can create differences even where none exist.
Decisionmaking

• Suppose that alternatives are graded on a single scale.
• Make decision by choosing the best.
• Could require amplification of small differences.
• Could require infinite amplification.
All-to-all inhibition

\[ \dot{x}_i + x_i = \left[ b_i + \alpha x_i - \beta \sum_j x_j \right]^+ \]

Consider \( \alpha > 1 \).
Unconditional winner-take-all
Differential modes are unstable
Conditional multistability

\[ x_i = \frac{b_i}{1 - \alpha + \beta} \]

\[ \frac{b_1 - b_i}{b_1} < \frac{\alpha - 1}{\beta} \]
One possible winner

\[ \frac{b_1 - b_2}{b_1} \geq \frac{\alpha - 1}{\beta} \]
Any neuron can win

\[ \frac{b_1 - b_N}{b_1} < \frac{\alpha - 1}{\beta} \]
Multistability

\[
\frac{x_1}{x_1 + x_2}
\]