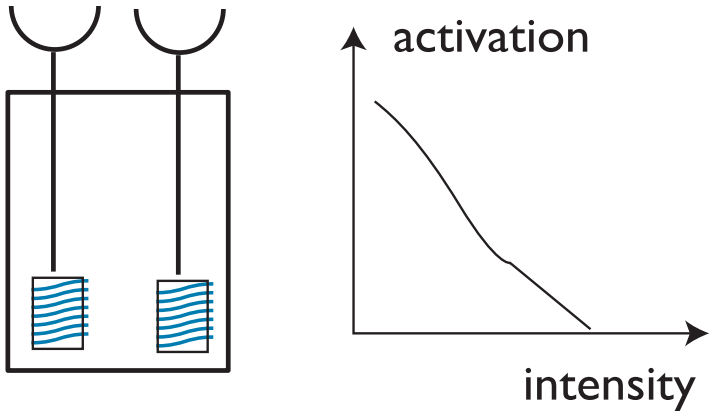
Prof. Dr. Gregor Schöner October 31, 2015

Exercise 1, October 28, 2015 to be handed in November 5!
Consider a Braitenberg vehicle number 2, with two sensors, which are connected to the ipsilateral (same side) effector. Assume the sensor characteristic is monotonically *decreasing* while the motor characteristic is monotonically *increasing*.



1. Analyze the behavior in the presence of a single source of stimulation by making a drawing and arguing qualitatively. [Reproduce the logic discussed in the lecture.]

2. What would happen if there were two sources in the environment? Argue in words. Make a drawing of the sensed intensity and distinguish different cases.

3. What would happen if the sensor characteristic has a zero crossing, e.g., at a positive level of the sensed physical intensity, activation is zero? [With the understanding, that negative activation going into the motor characteristic makes the motor turn backward.] Argue in words, perhaps with a drawing to support the argument.

4. Considering the case in which the vehicle drives fast.

   - What would make the vehicle drive fast ? [Think in terms of the sensory and motor characteristics.]
   - If it drove so fast, that it could not turn in time before shooting beyond the target, what would happen?
   - By implication, which implicit assumption was made in the lecture?

5. What would it take to transform this into a more formal, mathematical analysis? Argue in words. Perhaps make a sketch of such an analysis.