

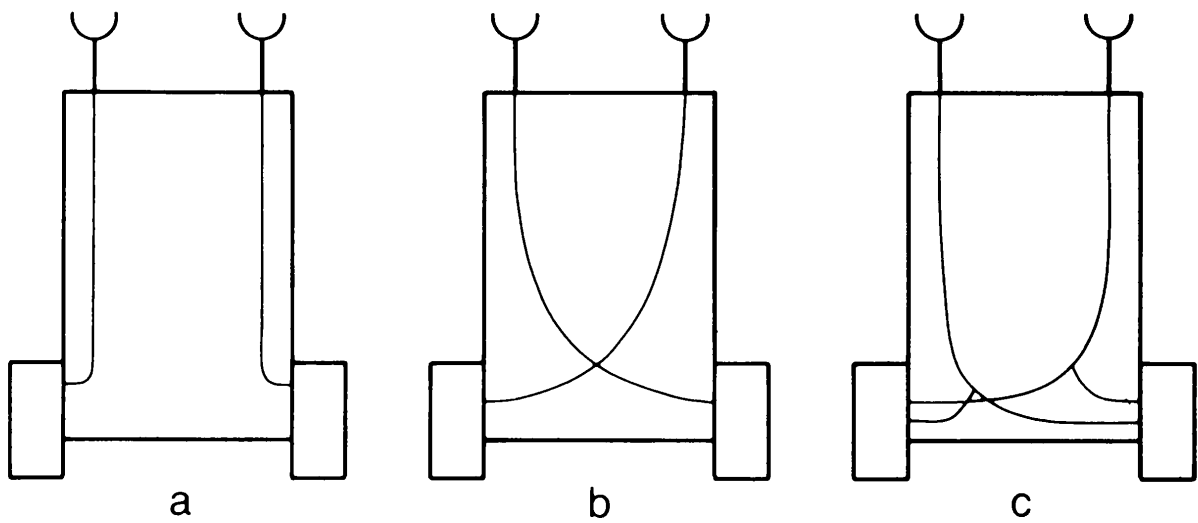
## Vehicle 2

### *Fear and Aggression*

Vehicle 2 is generally similar to Vehicle 1 except that it has two sensors, one on each side, and two motors, right and left (figure 2). You may think of it as being a descendant of Vehicle 1 through some incomplete process of biological reduplication: two of the earlier brand stuck together side by side. Again, the more the sensors are excited, the faster the motors run.

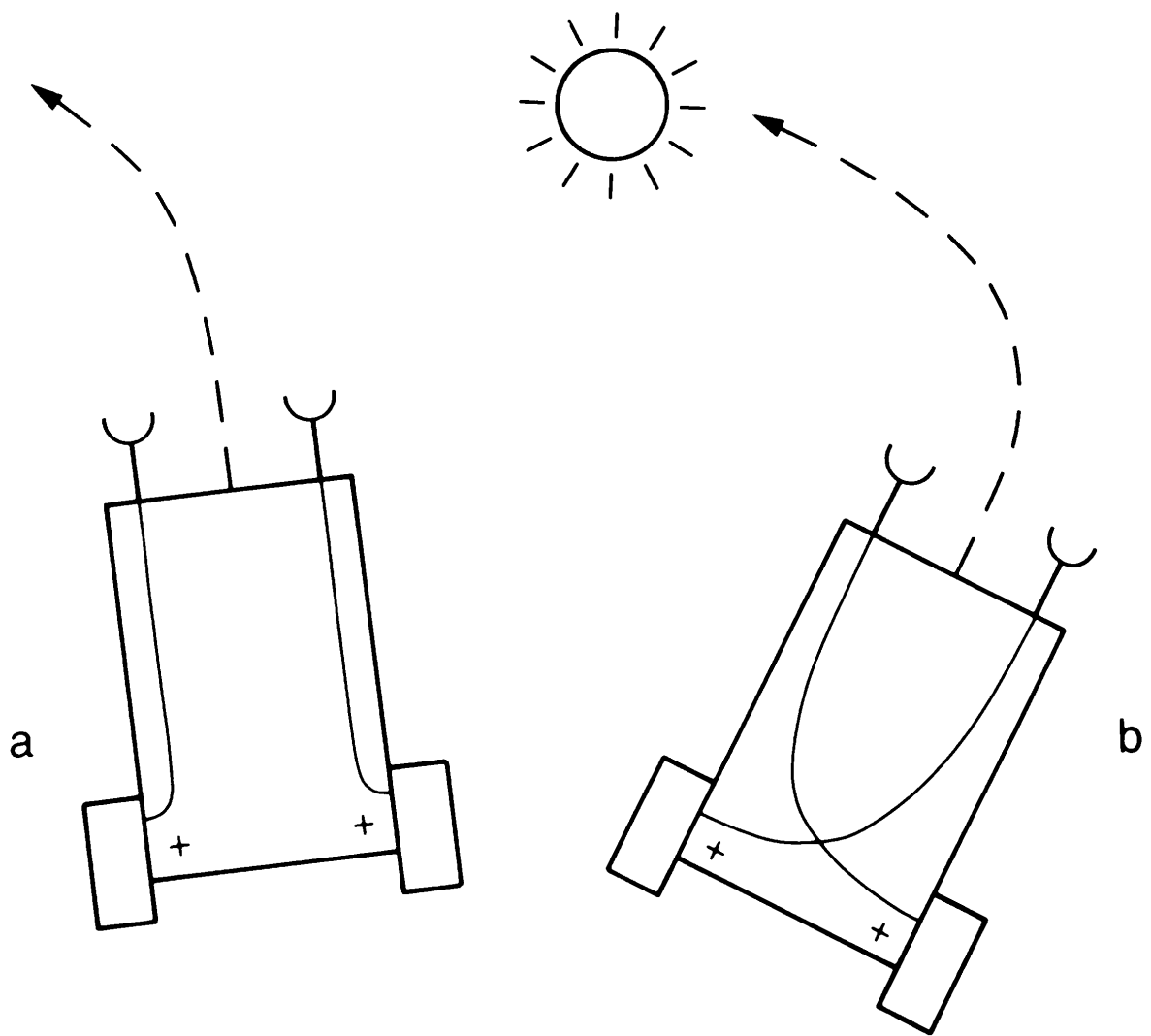
Of course you notice right away that we can make three kinds of such vehicles, depending on whether we connect (a) each sensor to the motor on the same side, (b) each sensor to the motor on the opposite side, or (c) both sensors to both motors. We can immediately dismiss case (c), for this is nothing but a somewhat more luxurious version of Vehicle 1. The difference between (a) and (b), however, is very interesting.

Consider (a) first. This vehicle will spend more time in the places where there is less of the stuff that excites its sensors and will speed up when it is exposed to higher concentrations. If the source of the stuff (say, light in the case of light sensors) is directly ahead, the vehicle may hit the source unless it is deflected from its course. If the source is to one side (figure 3), one of the sensors, the one nearer to the source, is excited more than the other. The corresponding



**Figure 2**

Vehicle 2, with two motors and two sensors; otherwise like Vehicle 1. The connections differ in a, b, and c.



**Figure 3**

Vehicles 2a and 2b in the vicinity of a source (circle with rays emanating from it). Vehicle 2b orients toward the source, 2a away from it.

motor will work harder. And as a consequence the vehicle will turn away from the source.

Now let us try the other scheme of sensory-motor connections, (b) in figure 3. No change if the source is straight ahead. If it is to one side, however, we notice a difference with respect to Vehicle 2a. Vehicle 2b will turn toward the source and eventually hit it. There is no escaping: as long as 2b stays in the vicinity of the source, no matter how it stumbles and hesitates, it will hit the source frontally in the end. Only in the unlikely case that a strong perturbation in its course makes it turn exactly away from the source, and no further perturbation occurs, can it escape its fate.

Let Vehicles 2a and 2b move around in their world for a while and watch them. Their characters are quite opposite. Both DISLIKE sources. But 2a becomes restless in their vicinity and tends to avoid them, escaping until it safely reaches a place where the influence of the source is scarcely felt. Vehicle 2a is a COWARD, you would say. Not so Vehicle 2b. It, too, is excited by the presence of sources, but resolutely turns toward them and hits them with high velocity, as if it wanted to destroy them. Vehicle 2b is AGGRESSIVE, obviously.