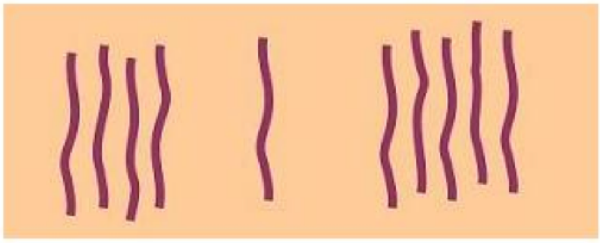
Take Ten Sticks

Take ten sticks and put them into heaps any way you like.

One possible distribution of the sticks is 4 - 1 - 5, but there are lots of other arrangements possible.



Next make one new heap using a stick from each of the heaps you have already.

Our example now becomes 3 - 3 - 4 (notice how the heap with just one stick vanishes).

Then keep repeating that process: one from each heap to make the new heap.

So the next thing we get is 3 - 2 - 2 - 3, followed by 4 - 2 - 1 - 1 - 2.

Continue repeating this until you see the distribution settle in some way.

Now try other starting distributions for the ten sticks, you can of course begin with more, or fewer, than three heaps.

The main question is: Could the arrangement

7 - 1 - 1 - 1

ever turn up, except by starting with it?