Re: probability concept

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The way the question was stated was, perhaps, unfortunate. It is an interesting question though. It is one of those situations where "intuitive" probability doesn't get it right.

I flip a fair coin five times and in 4 of 5 cases the result is a head. Assuming the coin is fair, a layman might predict that it is more likely to turn up a tail on the next flip.

There is an intuitive sense that things will balance out. What is not understood is that this will happen over a large number of trials and that there are frequently runs of apparently non−random outcomes on the way to that balance. As Abelson memorably puts it, "chance is lumpy".

So, here is the explanation:
1. The events are independent. As Kenneth puts it, the process is memoryless. Each flip of the coin has exactly the same probability as the previous, regardless of the outcome of the previous trial. The coin does not "know" what the previous outcomes was.
2. Chance is lumpy. With repeated trials, there will be runs of outcomes that are unusual. They will tend to even out over a sufficiently large number of trials. This does not change point #1.
3. That means, no mater how unlikely, if we flip a coin that is *know to be fair* 1 million times and see the extraordinary result of 1 million heads in a row, the probability of a tail on the next trial is 0.5. Though, I might also think about taking another look at the coin!

kenneth_m_lin@xxxxxxxxxxxxx wrote:

> The process of coin flipping is "memoryless," meaning that the outcome isn't affected by previous outcomes. On the other hand, you might have a two−headed coin in your case.

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