

Name _____

Date _____

Class Sec. _____

Instructions: Read the “Could the Universe Give a Toss”. After reading, answer the questions below. Make sure that for each question you explain your answer for full credit Reading on the next pages.

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1. Are a series of coin flips random? Please use lines from the passage to support your answer and explain.
2. What does the reading mean to tell us about probability not always being “out there”? Explain.
3. “No outcome should influence its successor”; what does this mean? Explain.
4. What impact do our personal experiences play when we make any inference (a conclusion reached on the basis of evidence and reasoning)? Explain.

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https://philosophynow.org/issues/97/Could_The_Universe_Give_A_Toss

Could The Universe Give A Toss?

Raymond Tallis thinks about probability

Imposing Patterns on Events

When you toss a coin, there are two possible outcomes – heads (H) or tails (T). No outcome should influence its successor: there is no causal pressure exerted by Toss 1 on Toss 2, as there is, say, from the movement of the thumb to the movement of the coin, so the chances of H on a particular occasion are the same irrespective of whether its predecessor was H or T. Improbable sequences – such as 100 straight Hs – do not defy or even bend the laws of mechanics. But if the outcome of Toss 1 does not influence the outcome of Toss 2, such that there is no gathering causal pressure for a T to follow a long run of Hs, why don't we easily accept that the series H, H, H... could be extended indefinitely? Why would an unbroken sequence of 100 Hs raise our suspicion of a bent or even two-headed coin?

Let us look a bit closer at the properties of a genuinely random sequence. As we extend the series of tosses, the number of possible patterns increases enormously, but the *proportion* of those that are significant runs of Hs or Ts are vanishingly small. There is a 1:4 chance of HH (the other possibilities being HT, TH, and TT), but 25 Hs in succession would be expected to occur by chance only once in 33,554,432 throws. The longer any run of Hs or Ts, the less frequently it will occur; so the most likely outcomes will be those in which runs of Hs or Ts are soon broken up. This is how we reconcile the 50/50 chance of getting H on a particular toss, irrespective of what has gone before, with the growing suspicion that appropriately greets a very long series of Hs and the mounting expectation of a T.

This is all basic stuff; but let us dig a little deeper. We'll start by focussing on the expectation that has been the ruin of many a gambler. The key point relates to the *history-so-far* of Hs. It is this history that makes us feel that the coin sooner or later will feel obliged to come up T. We must not, however, see the history-so-far as a kind of pressure bringing about affirmative action for Ts, so that they match the number of Hs: a history of coin-tosses is not in itself an event, even less a cause. Random *sequences* do not have the kind of reality, even less the causal efficacy, that individual events have. A sequence, in short, is neither an event nor a cause that can influence what follows it. This may seem counter-intuitive, but it's true, because 50/50 equipose or symmetry is an intrinsic property of the (idealised) coin, and that's not something affected by its history.

What makes a sequence seem like a cause is our subjective expectation, which turns a lengthening run of Hs into the idea of a kind of pressure to produce a T. Our expectation is, however, in no sense a force 'out there'. Rather, as David Hume pointed out, our habits of expectation often translate 'how things usually pan out' into 'how they are obliged to pan out'.

While it is clear that our subjective assessment of probability is not 'out there', we still retain the idea of there being objective probabilities 'out there' based on the expected relative frequencies of certain kinds of events or sequences of events. However, even probability understood in this way cannot entirely shake off their mental dependence. This is because a sequence of events is not 'out there'.

Efficacy: the ability to produce a desired or intended result.

Subjective: How something is perceived by us; personal experience of something.

Objective: How something happens outside of our perceiving it.