

Assignment for GNS 104

Imagine a gambler, Maxi Doe, who engages in a small gamble. Maxi Doe is not a pathological gambler; he is just playing a game for hedonic, recreational purposes. For the purpose of the following arguments, he also assumes the role of an enlightened gambler: He is not just playing for the fun or thrill of it, but he is actively engaged in metacognition while he is playing. In other words, Maxi Doe is 'thinking slowly', whereas, in the real world, even recreational, non-pathological gamblers are probably 'thinking fast'. Maxi Doe is not a realistic stand-in for gamblers, but more of a narrative aid.

The game Maxi Doe is playing is very simple: He is rolling a regular, fair six-sided die, and his prior information is that every number on the die has a probability of exactly $1/6$ of being rolled. Maxi can roll the die three times. If he rolls the number four at least once, he wins. If he does not roll the number four at least once, he loses.

Question one: what is the overall probability of succeeding at least once in a game of three die rolls?

Now, Maxi has rolled the die twice already. Unfortunately, he did not get a success yet, but instead two failures in a row. Maxi is about to roll the die for the third and final time. He feels that third time's the charm – after all, he failed twice in a row, and now, it is time for his chances to balance out. After all, the die is supposed to be fair, and in his subjective perception, Maxi feels like that fairness should bring about a success after a series of failures.

Question two (a): Is the overall probability of obtaining at least one success very pertinent to his current situation?

(b) Explain?

In his current situation, Maxi is certain that the sequence of outcomes that he will ultimately end up with has to either be f; f; f or f; f; s; Maxi, of course, hopes for the latter.

Question three: What is the probability that he will end up with the sequence f; f; s?

To be continued