Solution for review exercise 3 (chapter 1) in Pitman

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The outcomes of the experiment are $HHH, HHT, HTH, HTT, THH, THT, TTH, TTT$ taking the sequence into account. Assuming that these 8 outcomes are equally likely we see that the probability that the coin lands the same way at all three tosses is $\frac{1}{4}$. The flaw in the argument is the lack of independence. We use knowledge obtained from the experiment to choose the tosses which satisfy the requirement that the coin landed the same way at these specific tosses. It is thus less likely that the toss not chosen in the selection procedure had the same result, as one can verify by examining the outcome space.