東大過去問　２００２年　第５問　問題文

“I shall never believe that God plays dice with the world,” Einstein famously said. Whether or not he was right about the general theory of relativity and the universe, his statement is certainly not true of the games people play in their daily lives. Life is not chess but a game of backgammon, with a throw of the dice at every turn. As a result, it is hard to make (1). But in a world with any regularity at (2), decisions informed by the past are better than decisions made at random. That has always been true, and we would expect animals, especially humans, to have developed sharp (3)intuitions about probability. However, people often seem to make illogical judgements of probability. One notorious example is the “gambler’s fallacy.” “Fallacy” means a false idea widely believed to be true, and you commit the gambler’s fallacy if you expect that when a tossed coin has fallen on the same side, say, three times in a row, this increases the chance of it falling on the other side the next time, as if the coin had a memory and a desire to (4). I remember (5) an incident during a family vacation when I was a teenager. My father mentioned that we had suffered through several days of rain (6 . I corrected him, accusing him of the gambler’s fallacy. But long-suffering Dad was right, and his know-it-all son was wrong. Cold fronts, which cause rain, aren’t removed from the earth at day’s end and replaced with new ones the next morning. A cloud must have some average size, speed and direction, and it would not surprise me now if a week of clouds really did predict that the edge of the clouds was near and the sun was about to appear again, just as the (7) railroad car on a passing train suggests more strongly than the fifth one that the last one will be passing soon.

Many events (8) like that. They have a characteristic life history, a changing probability of occurring over time. A clever observer should commit the gambler’s fallacy and try to predict the next occurrence of an event from its history (9) far. There is one exception: devices that are designed to make events occur independently of their history. What kind of device would do that? We call them gambling machines. Their reason for being is to beat an observer who likes to turn (10). If our love of patterns were not sensible because randomness is everywhere, gambling machines should be easy to build and gamblers easy to beat. In fact, roulette wheels, slot machines, even dice must be made with extreme care and precision to produce random results.

So, in any world but a casino, the gambler’s fallacy is rarely a fallacy. Indeed, (11)calling our intuitive predictions unreliable because they fail with gambling devices is unreasonable. A gambling device is an artificially invented machine which is, by definition, designed (12). It is like calling our hands badly designed because their shape makes it hard to get out of handcuffs.