

Spotify deals with random shuffle and us mortals

February 26 2015, by Nancy Owano



How do we mortals perceive random sequences? An entry in the question-and-answer site Quora focused on a question involving a music-streaming service Spotify. That question signifies how we perceive what is and what is not random.

Question: Is Spotify's "Shuffle" feature truly random? An entry commented that "I've noticed lately that when I "Shuffle" all my songs on Spotify (I have nearly 3000 saved) that very often I end up hearing the same songs that I have listened to over the past couple of days. I realize that this doesn't mean anything as far as random goes since I could technically hear any [song](#) in my library, but it seems to be happening too often to be mere coincidence. So I want to know, does

Spotify use some kind of special [algorithm](#) to determine what song I listen to on 'Shuffle?' And if so, why?"

Mattias Petter Johansson, Spotify software engineer, nailed the reason for why it is tricky to assume a pat answer such as "of course, truly random" and just leave it like that and walk away from the person asking the question. "The problem is that to humans, truly random does not feel random," he said, "so we got tons of complaints from users about it not being random." Some might ask, what's this? Deals with music labels to push certain artists over others? Or do our brains consider repeat plays surprising, making the events stick out in our mind? Spotify last year came up with a new algorithm to make the process *feel* more random to humans. The irony is that they first used the Fisher–Yates shuffle algorithm, unbiased, with every permutation equally [likely](#). The problem was that "truly random" did not feel random, and they received complaints from users about it not being random, he said.

Babar Zafar, a lead developer at Spotify, told the BBC World Service that "Our [brain](#) is an excellent pattern-matching device"—so excellent that it will find patterns where there are not any—or, as BBC technology reporter Dave Lee put it more bluntly, "the human brain, for all its brilliance, is a sucker for coincidences."

The lack of uniform distribution may throw us off. "A truly random playlist might spit out something like this: AACBBCBACABBCCACCCCABBACBACABABB," said Lee. "It is random, but it sure will not feel like it." (In 1913, at a Monte Carlo casino, black came up 26 times in succession [in roulette].) Describing the new algorithm, the BBC said, "Spotify's algorithm takes into account how long a playlist is, and how many of each type of song there are. So if there are four White Stripes songs in the list, they will each appear at roughly 25 percent intervals."

Lukáš Poláček said in the Spotify Labs blog, "We decided to look into ways of changing our shuffling algorithm so that the users are happier. We learned that they don't like perfect [randomness](#). He added, "At first we didn't understand what the users were trying to tell us by saying that the shuffling is not random, but then we read the comments more carefully and noticed that some people don't want the same artist playing two or three times within a short time period."

More information: [www.quora.com/Is-Spotifys-Shuf ... ias-Petter-Johansson](http://www.quora.com/Is-Spotifys-Shuf...ias-Petter-Johansson)

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