# Don't know much about history? Study shows pop music snobs are mistaken

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Snoop Dogg performs at Levi’s® x Snoop Dogg + Friends Pre-Grammy Party held at the Hollywood Palladium in Hollywood, California, Feb 5, 2015. Photo: Photo by Dan Steinberg/Invision for Levi's/AP Images

A group of engineers and biologists studied 17,000 songs from Billboard's Hot 100. What they found may surprise some music fans.

Forget the Beach Boys, Michael Jackson and Madonna. The most important cultural change in American pop music began with the explosion of rap in the early 1990s.

The Beatles and the Rolling Stones didn’t spark the mid-1960s British Invasion, when rock and pop groups from across the Atlantic Ocean took over U.S. radio. But they did make rock music more popular.

**They Just Don't Understand**

And don’t buy the snobs’ complaints that pop music all sounds the same. Except for a brief period in the 1980s, there’s been plenty of different kinds of pop music over the years.

The team used computers to study and organize songs into different styles, much as scientists categorize dinosaur fossils, said Armand Leroi. He is an evolutionary biologist at Imperial College London who helped oversee the research. He studies how life evolves, or how it has grown and changed over time.

“Culture can — and should — be studied scientifically,” Leroi said. Evolutionary biology, with its focus on the diversity of life, offers a perfect way to study the arts, he said.

“Why are there so many creatures?” he mused. “Why are there so many songs?”

The results of the study were published Wednesday, May 6 in Royal Society Open Science, a magazine for scientists.

**More Than A Feeling**

To trace how pop changed over time, Leroi and his co-authors used 30-second snippets of 17,904 songs. The songs appeared on the Billboard Hot 100 list from 1960 to 2010.

The researchers decided not to use the kind of categories listeners might for their favorite songs — “hard rock,” “folk” or “electronic,” for example. Instead, they classified songs according to features that could be scientifically measured, such as chords, rhythms and tone.

They put each song into one of 13 style groups, based on the patterns they found. To double-check their results, they looked at how users of Last.fm, an online music discovery service, had labeled the tracks.

For the most part, the judgments of the computer and the humans matched up. Songs that the computer classified as Style 2, for example, had received Last.fm tags such as “hip-hop,” “rap” and “old school.” Songs sorted into Style 8 had been described by listeners as “new wave,” “dance” and “electronic.”

**Everything Has Changed**

Once they had everything organized, Leroi said, the researchers started asking interesting questions about the songs. Like evolutionary biologists examining the differences among species, they wondered about diversity in pop music. Are there many styles on the charts, or does pop music all sound the same?

Older music fans often complain that the music people now listen to is like kiddie pop compared to the great music of the past, Leroi said. However, the team found that generally music didn't all sound the same, except for one stretch of time around 1986. Everyone went nuts for synthesizers and drum machines.

Another question inspired by evolutionary biology was whether music styles evolved slowly or in large leaps. To find the answer, the team calculated rates of change between songs over time. They found three years of rapid change — 1964, 1982 and 1991.

**Beat Revolution**

The largest and most important of the three was the explosion of hip-hop in 1991.

“That surprised me,” Leroi said. “I would have guessed it was 1964,” the year of the British Invasion.

Then the researchers decided to take a closer look at the Beatles and the Rolling Stones. Surprisingly, they discovered that those key bands didn’t start the new style of music of their era. Rather, they helped speed up those musical changes by making new styles more popular.

Leroi said it was exciting to get a glimpse of music history that didn’t depend on people's memories.

**That Old-Time Rock And Roll**

“You can say, ‘This is really when it happened,’” he said.

The study authors included experts from the very different worlds of biology and music. In the paper, they wrote that they would like to extend their study further back. They'd like to look back “at least the 1940s, if only to see whether 1955 was, as many have claimed, the birth date of Rock and Roll.”

He said the research team could have focused on many subjects. They chose the Billboard Hot 100 in large part because it is so popular.

“I guess we could have done a couple of centuries’ worth of novels. But somehow it’s not as exciting as 50 years of pop music,” he said. “It’s wonderful to be able to look at it in a scientific way.”