# Scientists study hit songs, find more variety than "experts" think there is

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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

Recently a group of scientists and music experts studied 17,000 songs from Billboard's Hot 100. Billboard magazine's list ranks the most popular music each week. What they found may surprise some music fans.

For one thing, the most important change in American pop music was the birth of rap in the early 1990s.

For another, the Beatles and the Rolling Stones didn’t begin the British Invasion. In the 1960s, rock and pop groups from England flooded the American music scene. The Beatles and Stones did make British music more popular, though.

## Dinosaur Fossils ... And Songs

Also, it is just not true that all pop music sounds the same. In fact, there have been plenty of different kinds of pop music over the years.

The team used science to trace how pop music changed over time. It was like how scientists put dinosaur fossils into categories, said Armand Leroi. He is an evolutionary biologist at Imperial College London. He studies how life evolves, or how it has grown and changed over time. He helped run the study.

Leroi said “culture can — and should — be studied scientifically.” Evolutionary biology offers a perfect way to study the arts, he said.

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

## 13 Style Groups

Leroi and his team used 30-second snippets of 17,904 songs. The songs appeared on the Billboard Hot 100 list from 1960 to 2010.

They used computers to study and organize songs into different styles. The scientists decided not to use the kind of categories listeners might use. Listeners might label what they hear “hard rock,” “folk” or “electronic,” for example. Instead, the scientists grouped songs by features that could be measured, including chords (a group of notes) and rhythms.

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 had labeled the songs. Last.fm is an online music service.

For the most part, the computer and the humans matched up.

## Lots Of Variety

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

The team found that there were different types of pop music. In 1986, though, everyone went nuts for electronic music and for a while music mostly sounded the same.

Another question was whether music styles changed slowly or in large leaps. To find the answer, they figured out the speed of change between music over time. They found three years of very quick change — 1964, 1982 and 1991.

## Hip-Hop Explosion

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.

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

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

## When Did Rock And Roll Start?

The study included experts from biology, technology and music. They would like to look back further back to at least the 1940s. Their goal? To see if 1955 was the birth of rock and roll. That year, Bill Haley's "Rock Around the Clock" became the first rock and roll song to top the charts.

He said the team could have looked at many subjects. They chose the Billboard Hot 100 mainly because it is so popular.

Leroi said they could have looked at a couple hundred years worth of books. "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.”