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Apple's best gift was Beatles catalogue

By JASON BROWN
Mon, Dec 20 - 4:53 AM

I have to congratulate Apple on what I consider their big gift to adolescents across the world. No, it's not the iPad. It's the licensing of the Beatles catalogue for iTunes.

It's well documented that those children who are exposed to music at an early age do better at learning mathematics later on. Why is that?

There are several bases for this claim. Firstly, music and mathematics are learned and utilized in a similar manner. And, secondly, both rely on recognizing and creating beautiful patterns.

You'd be astonished at how much mathematics your brain automatically does when it listens to music, recognizing at a subconscious level the inherent expectations set up and the revelling in the clever surprises that thwart your anticipation.

No one in rock music has been better at balancing the tightrope between repetitions and revelations than the Beatles. Let me give you an example.

Listen to the melody of John's Nowhere Man. The way it's constructed, the opening ("He's a real . . .") jumps up five semitones — a perfect fourth in music terminology, followed by a run down of three consecutive scale tones.

The next phrase ("Sitting in . . ."), jumps up four semitones — a major third, followed by a run of three.

The third phrase ("Making all . . .") skips up three semitones — a minor third, followed by another run of three.This amounts to a clever little pattern, involving an application of what we mathematicians call a transformation, to the opening intervals, shrinking them by a single unit each time around.

You can guess what the last phrase will be, right? Of course it will start by jumping up two semitones. But John is too clever for that. He breaks the expectation by making the last phrase skip down two semitones.

And the other Beatles were always "in tune" with the patterns inherent in the songwriting; George's guitar solo in the same song inverts the direction of John's melodic patterns, and the inversions are again a transformation, akin to reflections in a mirror.

The cumulative effect of the transformations is to build variety in the context of consistency, and in the end, what we feel on an emotional level is that the song is both cohesive and startling.

Now I know that you must be thinking, "I don't hear math in the music I listen to, and I don't want to!" The music moves you emotionally, and certainly that couldn't possibly be

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happening through math. But mathematical patterns in songs can make you dance.

In rock ’n’ roll, the basic beat is built up of groupings of fours. But the grandmaster of rock guitar, Chuck Berry, loved to play groupings of threes on top. The sound is so wild that he would begin his famous "duck walk" across the stage.

Of course, to make patterns of threes and patterns of fours line up properly, you have to work inherently with the least common multiple of three and four, which is 12, and Chuck always made sure to do the calculations subconsciously in his head to make things work out.

It is exactly this arithmetic trick that George Harrison loved so much, from his fast, wild solo in A Hard Day’s Night, to his delicious acoustic guitar work in Here Comes the Sun.

So when the success of a pop song is inversely proportional to the amount of clothing people are wearing in the accompanying video, encourage your kids to download Beatles music. In the scorched desert of today’s repetitive music (THUNK THUNK THUNK THUNK . . .), they will likely find the brilliant music of John, Paul, George and Ringo thirst-quenching.

And what is good for the musical brain is good for the mathematical brain, and vice versa . . .

Jason I. Brown is a mathematics professor at Dalhousie University in Halifax.

Creed fans need Brotherhood

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3. Giggles, insults bug travellers (43 votes)
4. Kentville’s Snack Shack surprises, somewhat (34 votes)
5. What happens when there’s no room at the inn for animals? (28 votes)
6. Mayor: Have a heart and don’t ticket (26 votes)
7. Inmates to keep pensions for now (25 votes)
8. Customers slam NSP tax deferral bid (21 votes)
9. Gunmen burst into Dartmouth home, steal purse (19 votes)
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