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5/16/19

<div align="center">Music on a Mobius Strip</div>

I chose as the main focus of my presentation the possibility of representing music

on a Mobius strip – the conceit of a "single-sided" musical piece. Any linear

representation of music, like a strip of paper, can be twisted 180° and brought into a

closed loop to form a Mobius band. My presentation examines two different linear

representations of music undergoing the above-mentioned transformation.

We start by looking at the most commonly understood way of representing music

on a line: Notation on a musical staff. The style of composition most relevant to the

possibility of a musical Mobius strip is the "Crab Canon" musical piece by Johann

Sebastian Bach, in which a single melody reads equivalent in reverse.

For Crab canons, Bach would compose a single line of music but would include the Clef

reversed at the end of the notation, to indicate that the piece should be played forwards

and backwards simultaneously. The compositions therefore require two voices (as if to

suggest two sides, thinking topologically) and they are rather virtuous in that the melody is harmonized by itself in reverse. In a youtube video titled "J.S. Bach - Crab Canon on a Möbius Strip," the content provider "Jos Leys" displays an excellent animation which takes of advantage of the linearity of the musical staff to literally transform a Crab canon into a Mobius Strip. The same melody is imposed upside down on the back of the musical staff, and then twisted 180º into a closed loop.

 As a Mobius strip, the two musical voices have been collapsed onto a single side, although each voice can still be heard distinctly at any given point during the piece's performance. In this way, Bach's crab canons can be thought of as "single-sided" musical pieces, where beginning the music at X point on the strip is equivalent to ending the music on X point on the strip.

Notation on staff paper works as a guide for live performance of acoustic (or sometimes electric) instruments, so I tried to think of linear representations of music specific to other musical styles. Electronic musicians, using audio editing software applications such as Garageband for Mac or Pro Tools, often work with a totally different musical linearity called an audio region. The region is a visual representation for the file that stores digital audio data. So this linear representation, rather than being

a guide for live performance of music, plays back music which has already been recorded. I thought it would be pretty interesting and fun to apply the same Mobius transformation to the strip-like audio region, so I recorded something on my Yamaha keyboard to use for my own Mobius strip.
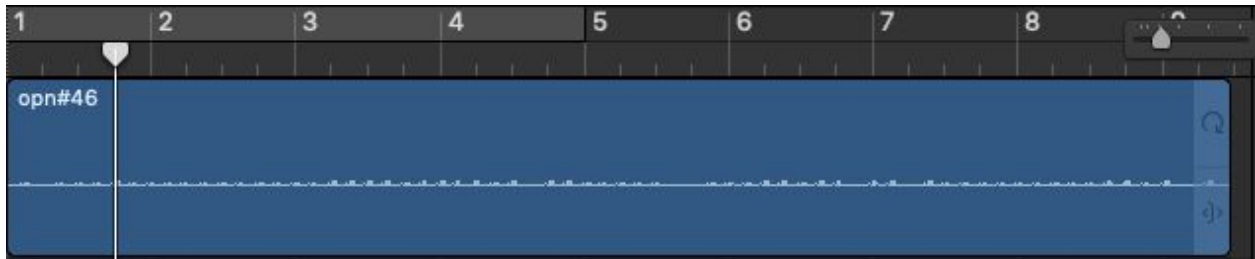
I printed two copies of the above image (as in, carrying the same musical content just like the Crab canon) and then imposed one copy upside down on back of the other. Musically speaking, the upside down copy is the original melody in reverse. Then I performed the 180° twist and beheld my awesome creation.

Well, not quite. Because in the process of being printed the audio region ceased to be digital, and the region's musicality is predicated on the playback of digitally recorded audio, it is really not as compelling on a Mobius strip as Bach's Crab canons notated on a musical staff. So the above image is more of a preview of the idea, if current

technology allowed, for a Mobius strip whose single side is a computer screen. Then, as the cursor moved through the audio region, the strip might be connected through bluetooth to an external speaker system from which to hear the digitally recorded melody harmonized by its reverse. The Crab canon in a more electronic style!