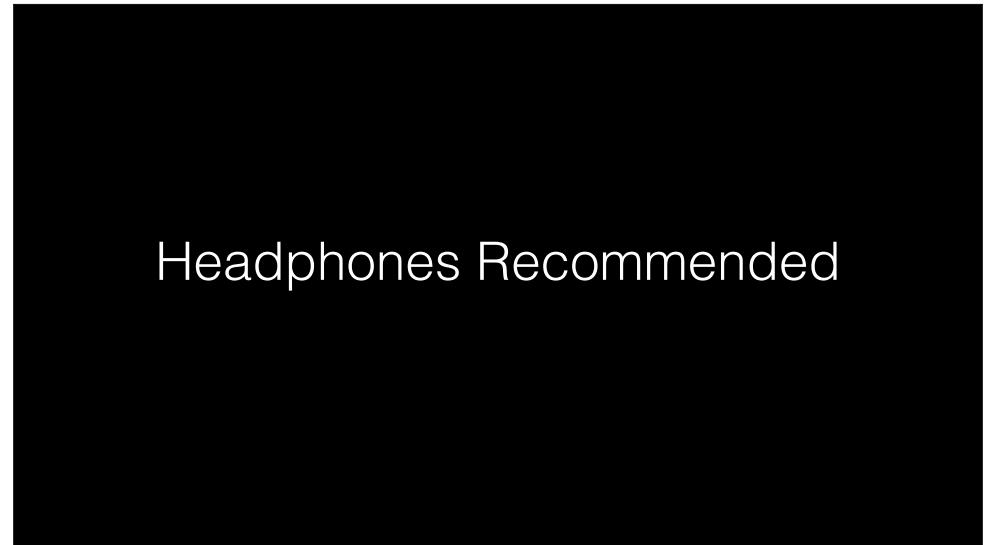




Headphones Recommended



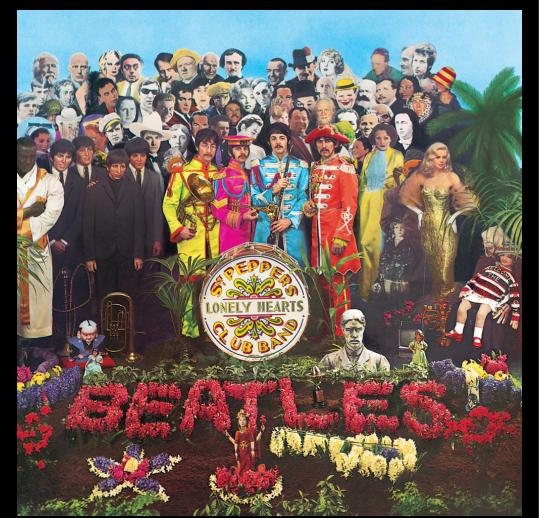
Headphones Recommended



1/5

How long does it take for a medium to mature?

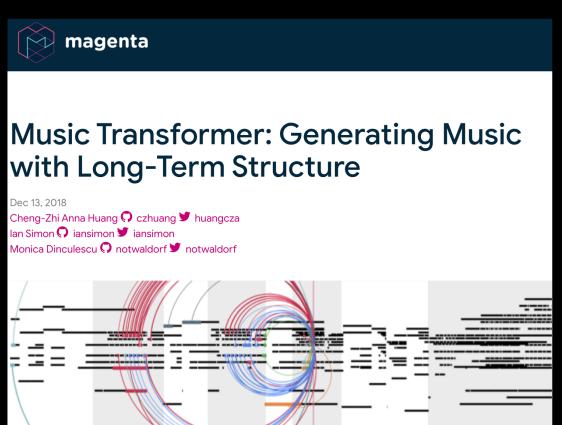
The Beatles  
Sgt. Pepper's Lonely Hearts Club Band  
1967



2/5

## A Musical Idea Enabled By Technology

Symbolic Music Generation  
Google  
Music Transformer



3/5

## Contemporary Musical Ideas

Waveform Generation  
OpenAI Jukebox  
"Hip Hop, in the Style of  
Kanye West"

Dhariwal, P., Jun, H., Payne, C., Kim, J. W., Radford, A., & Sutskever, I. (2020). Jukebox: A Generative Model for Music. Retrieved from <https://arxiv.org/abs/2005.00341>



Waveform Generation

Holly Herndon  
Frontier - PROTO  
2019



Holly Herndon, PROTO, Frontier. <https://www.youtube.com/watch?v=rvNqNgHAEys>

## 4/5 Fluid Music

Muziek voor 4 korige  
diatonische cister

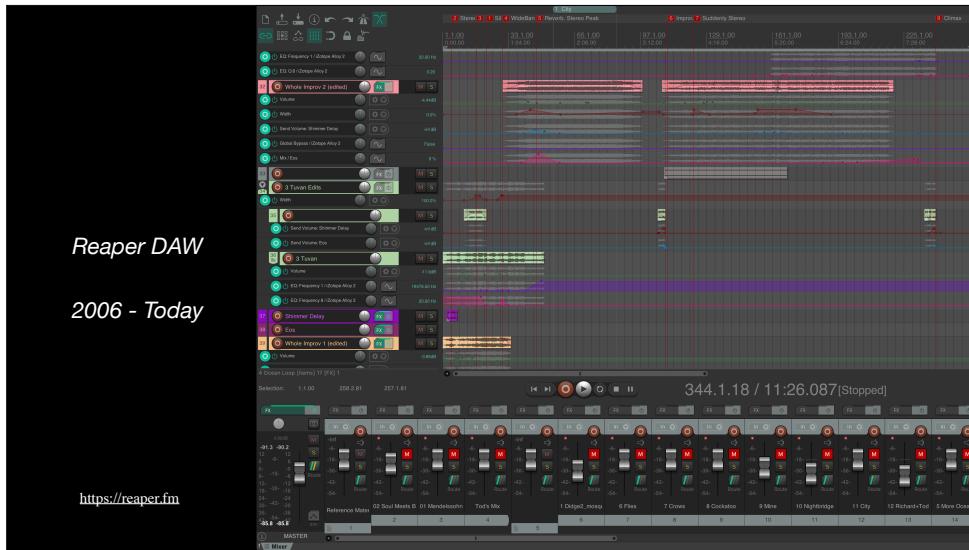
1500s



source: <https://lib.ugent.be/en/catalog/ug01:001196515>

The Who  
Who's Next  
Baba O'Riley  
1971





<TRACK {87363EFD-D813-E140-B4A3-FC36F7903490}  
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VOLPAN 1 0 -1 -1 1  
SEL 0  
REC 0 0 1 0 0 0 0  
INQ 0 0 0 0.5 100 0 0 100  
NCHAN 2  
FX 1  
TRACKID {87363EFD-D813-E140-B4A3-FC36F7903490}  
MIDIOUT -1  
MAINSEND 1 0  
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BYPASS 0 0 0  
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>  
PRESETNAME "stock - steady rock kick"  
FLOATPOS 0 0 0 0  
FXID {477B50A1-B9B9-BC4B-8E20-8C3E2917A24F}  
WAK 0 0  
>

**Reaper DAW**  
2006 - Today  
<https://reaper.fm>

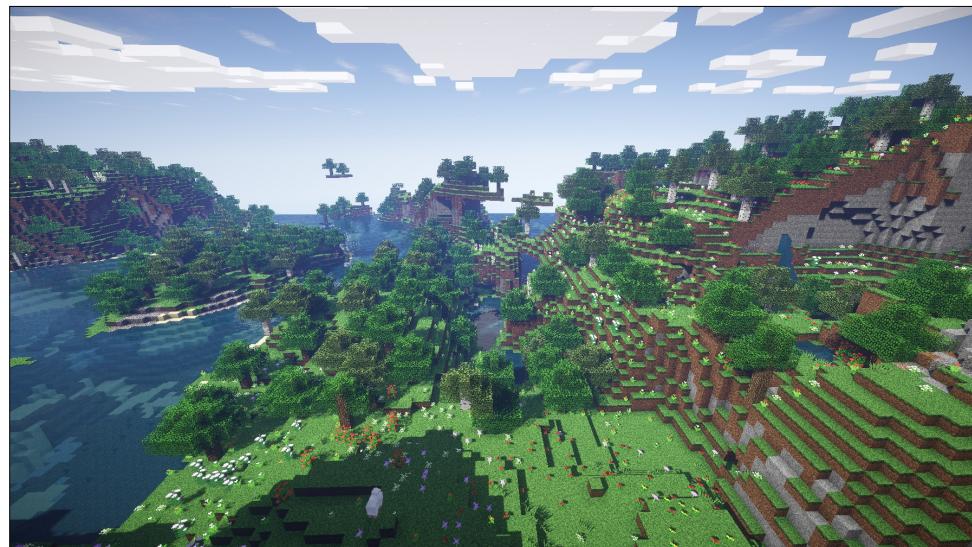


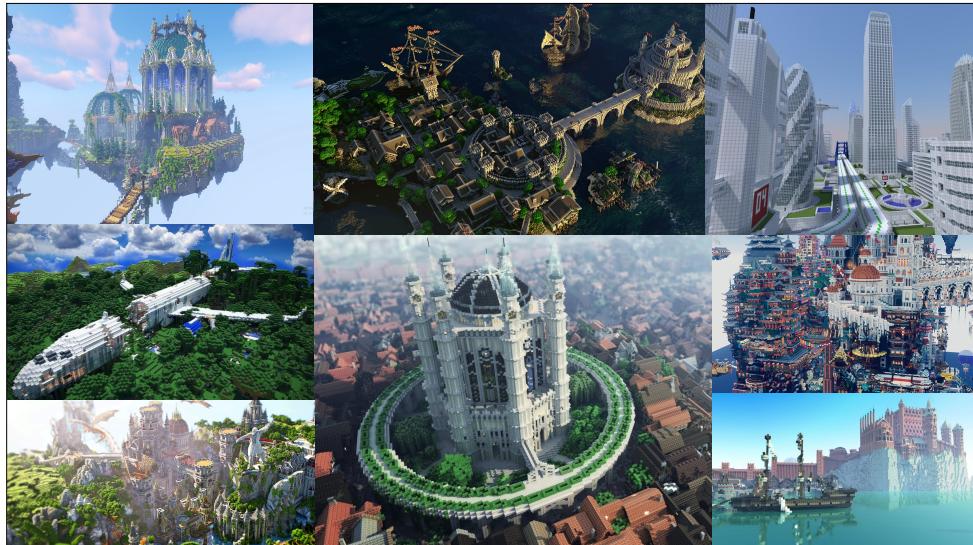
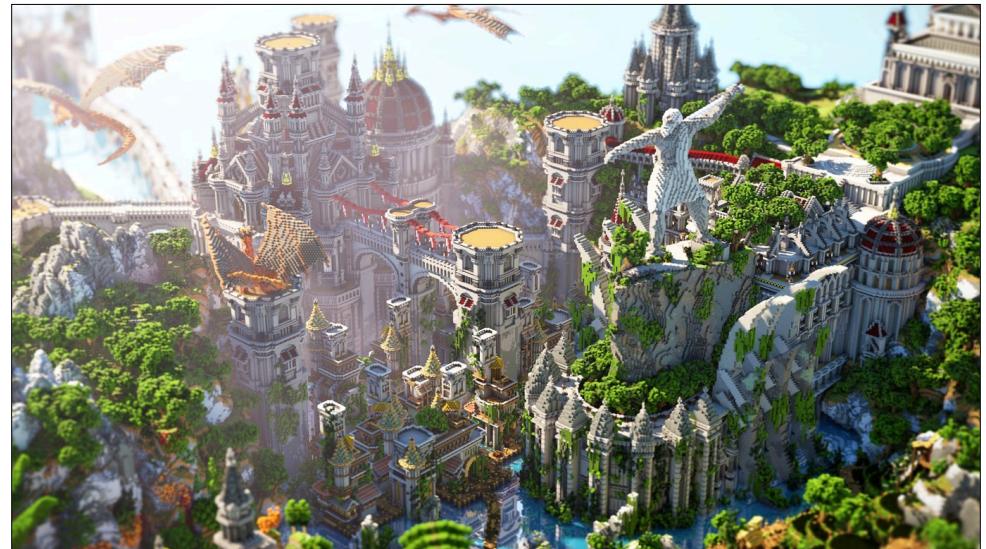
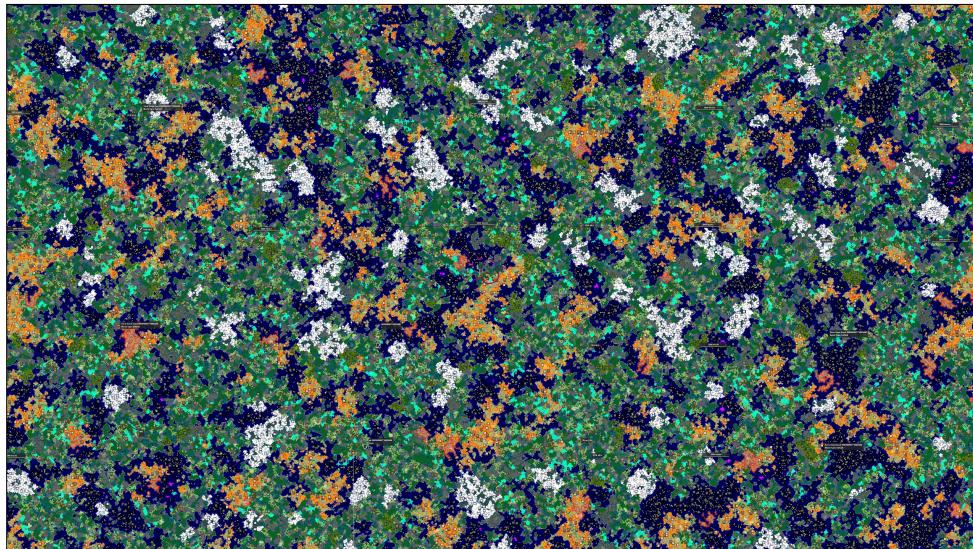
## Musical ideas that can be described with the fluid engine

- Chord Progressions
- Rhythmic Patterns
- Arpeggiator Patterns
- Studio Production, routing, mixing techniques
- ...anything that you can code



5/5  
Combinatorial Creativity





**Thank You.**

Charles Holbrow

MIT Media Lab, Opera of the Future

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