
CHROMESTHESIA

<IntroFilm>

WHAT A GREAT SONG DOES TO YOUR EARS . . .

. . . I WANT TO DO TO YOUR EYES.

THE MEMBERS I NEED IN MY BAND FOR THAT:

- A WORLD BASED ON FREQUENCIES' AMPLITUDES
- FFT AND SPECTRAL FLUX ANALYSIS
- OCULUS QUEST
- DECISIONS

AND NOW HOW I CONSTRUCTED THIS COMPOSITON

CHROMESTHESIA

A WORLD BASED ON FREQUENCIES' AMPLITUDES

A VISUALLY PLEASING EXPERIENCE MADE UP OF A SONG'S FREQUENCIES

- IMMERSIVE, ALL SURRONDING EXPERIENCE
- FREQUENCIES' AMPLITUDES SHAPE THE STRUCTURE
- BEATPOINTS AFFECTING THE STRUCTURE

A FUN WAY TO EXPLORE AND LEARN ABOUT SOUND AND FREQUENCIES

- HOW AUDIO EFFECTS SHAPE THE SOUND
  - *REVERB AND CHORUS EFFECT*
- WHAT FREQUENCIES MAKE UP THE SOUND
  - *MUTE AND SOLO FREQUENCIES*

CHROMESTHESIA

A WORLD BASED ON FREQUENCIES' AMPLITUDES

< VIDEO OF THE TUNNEL GRID >

< PICTURES OF THE COMMAND CENTER >

CHROMESTHESIA

FFT AND SPECTRAL FLUX ANALYSIS

FAST FOURIER TRANSFORM

- AMPLITUDES FOR THE FREQUENCIES OF A SOUND AT SPECIFIC TIME INTERVALS

→ LINEAR REPRESENTATION OF THE AMPLITUDES OF A SAMPLE REGION AT A GIVEN POINT IN TIME

SPECTRAL FLUX

- SUDDEN, LARGE CHANGES IN A FREQUENCY'S AMPLITUDE

→ DEFINED BY TIME AND RELATIVE CHANGE OF THE AMPLITUDES

CHROMESTHESIA

FFT AND SPECTRAL FLUX ANALYSIS

MOST IMPORTANTLY

→ PRE-PROCESSED!

CHROMESTHESIA

FFT AND SPECTRAL FLUX ANALYSIS

WORKING WITH THE DATA

FAST FOURIER TRANSFORM

- NOTES ARE LOGARITHMICALLY SPACED

→ LOGARITHMICALLY STAGGER FFT WHEN APPLYING DATA TO TUNNEL BLOCKS

- AMPLITUDES OF LOWER FREQUENCIES ARE MUCH HIGHER THAN OF THE HIGHER FREQUENCIES

→ INVERSE LOGARITHM AND USE AS A SCALING FUNCTION FOR A PERCIEVED REPRESENTATION OF LOUDNESS

SPECTRAL FLUX

→ SAVING TIME OF BEATPOINTS

CHROMESTHESIA

DEVELOPING FOR VR / OCULUS QUEST

OPTIMIZING PERFORMANCE

→ USING PROFILERS TO GAIN INSIGHTS

<PICTURE OF CURRENT PROFILER WITH 9 DRAW CALLS> <PICTURE OF OLD PROFILER WITH OVER 1K DRAW CALLS>

→**INSIGHT GAINED:** WAY TOO MANY DRAW CALLS

CHROMESTHESIA

DEVELOPING FOR VR / OCULUS QUEST

DRAW CALLS

- RENDER PIPELINE LOOKS AT EACH MESH AND DETERMINES WHETHER OR NOT IT HAS AN EFFECT ON THE OTHER MESHES WHEN IT DRAWS A FRAME

→ 32 X 500 INDIVIDUAL MESHES FOR MY TUNNEL

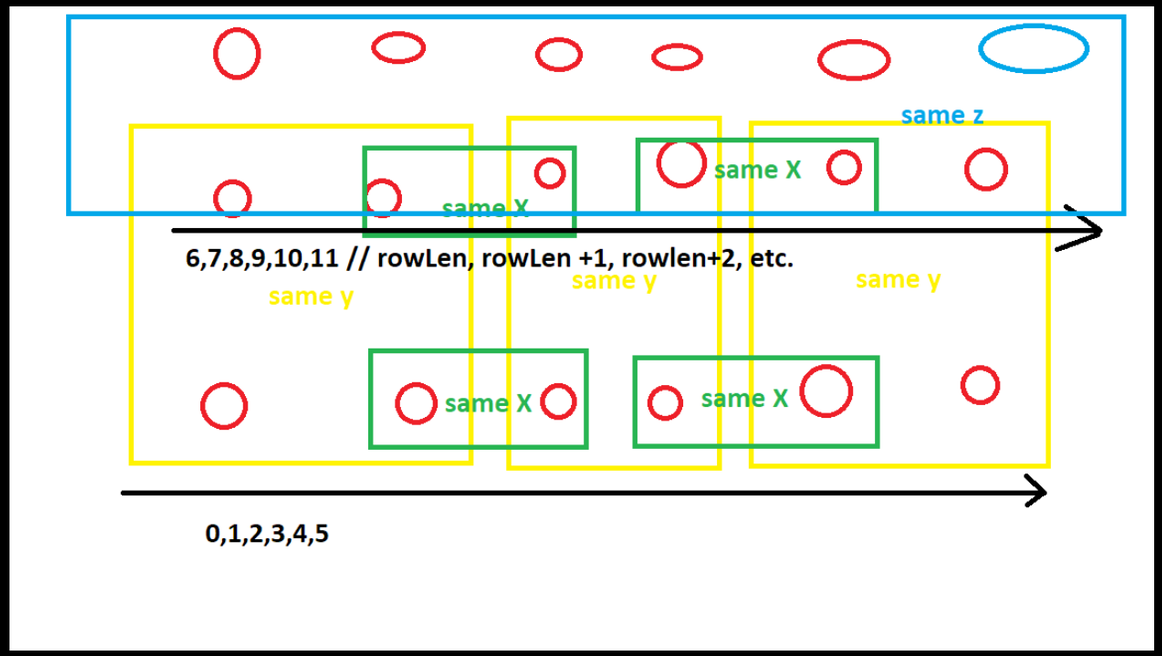
→ **SOLUTION:** CREATE A SINGLE MESH FOR THE TUNNEL

CHROMESTHESIA

DEVELOPING FOR VR / OCULUS QUEST

CAN'T BE THAT HARD RIGHT?

SEE MY BRAIN MELTING IN ACTION:



CHROMESTHESIA

DEVELOPING FOR VR / OCULUS QUEST

BUT SOMEHOW ...

SUCESS!

<PICTURE OF TUNNEL GRID MESH>

CHROMESTHESIA

DEVELOPING FOR VR / OCULUS QUEST

WORKING IN 2D FOR 3D

<IMAGE SCENE ON MONITOR> <IMAGE SCENE IN VR>

→ FEEL OF SCALE IN SCENES IS VASTLY DIFFERENT WITH A 360 DEGREE VIEW

CHROMESTHESIA

DEVELOPING FOR VR / OCULUS QUEST

INTERACTIONS

- INTERACTIONS ON A 2D SCREEN DON'T FEEL THE SAME IN A 3D ENVIVRONMENT

<PICTURE UI 2D SLIDER> <PICTURE POINTER SLIDER IN 3D ENVIVRONMENT>

→ INTERACTIONS SHOULD RESEMBLE REAL-LIFE-INTERACTIONS RATHER THAN USUAL HUMAN-COMPUTER-INTERACTIONS TO MAKE USE OF VR

CHROMESTHESIA

DEVELOPING FOR VR / OCULUS QUEST

< VIDEO OF COMMAND CENTER INTERACTIONS >

CHROMESTHESIA

DECISIONS

DROPPING THE SOUNDCLOUD API

- SOUNDCLOUD ONLY GIVES A STREAMING URL AS POSSIBLE ENDPOINT FOR A REQUEST
- YOU COULD DOWNLOAD THE STREAMED SONG AND TEMPORARLY SAVE IT IN THE ASSET FOLDER

→**BUT:** AUDIOFILE NEEDS TO BE DECOMPRESSED, UNITY CAN ONLY DO THIS ON LOAD

→ I SIMPLY DON'T HAVE ENOUGH KNOWLEDGE WITH C# TO IMPLEMENT SOMETHING LIKE THIS IN THE REAMINING TIME

CHROMESTHESIA

DECISIONS

TWO DIFFERENT WORLDS AFFECTING EACHOTHER

SELECT ROOM

- SMALL, QUIET, NOTHING FANCY
- MOVEMENT RESTRICTED

CHROMESTHESIA EXPERIENCE

- ABSTRACT, FUTURISTIC, HUGE
- FREE MOVEMENT

→ SYNERGY TO INCREASE EMOTIONAL RESPONSE

CHROMESTHESIA

DECISIONS

TWO DIFFERENT WORLDS AFFECTING EACHOTHER

<PICTURE SELECT ROOM>

<PICTURE CHROMESTHESIA>

CHROMESTHESIA

IN MY DOCUMENTATION I WROTE:

„WITH THIS DECISION I THINK I ACTUALLY BUILD AN EXPERIENCE VISUALLY

WHICH IS ADEQUATE TO THE ONE A (GREAT) SONG SONICALLY IS:

BIGGER THAN LIFE, ALMOST SURREAL AND SOMETHING WHICH SIMPLY AMAZES YOU.“

BUT DID I?

YOU BE THE JUDGE!

CHROMESTHESIA

<DEMO>

CHROMESTHESIA

OUTLOOK

- 3D SPECTRUM AS ILLSUTRATIONS FOR INDIVIDUAL SHIRTS, POSTERS, ETC.

- CUSTOM MESHES FOR MUSIC VIDEOS
    - MAYBE EVEN WITH VIRTUAL PRODUCTION

- CONNECT WITH DAW FOR HIGH PRECISION MIX
    - LOTS OF NEW FEATURES BUT AN ENGINEER COULD SEE HIS ERRORS MORE CLEARLY

CHROMESTHESIA