The Fundamentals of Storytelling for Virtual Reality

Hunter Dyar

Hunter Dyar

Hugh aka Hunter aka Smokey aka HD

Educator

- Produce OER

Simulation as Visualization

Designer, *I guess.*

Software Engineer, *for some reason*

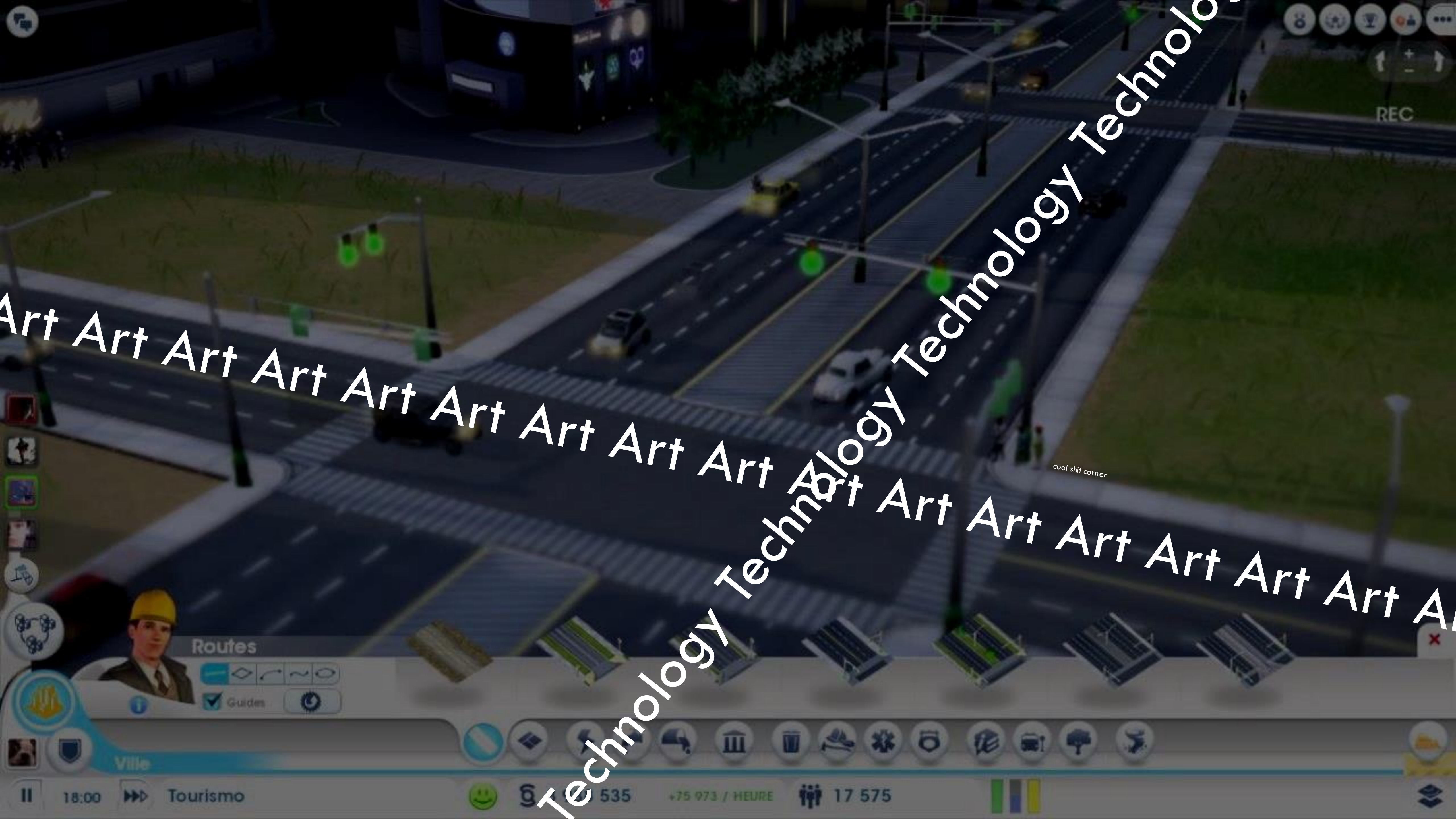
Game Designer. Immersive Designer.

Photographer

- *I was the photographer for the 'Weird Reality 2016' conference*

Why You Should Listen To Me

- Assistant Professor of Immersive Media
- IDeATe Adjunct: Intro To Unity & Pragmatic Photography
- Master of Emerging Media at CMU
  - Thesis on 360 video editing & cinematography
- 360 Photographer and videographer
  - Producing virtual tours of college campuses
- Game designer and developer
- Worked on ‘The Goodbye Room' with Max Ellinger (and others)
- I like VR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The Fundamentals of Storytelling for Virtual Reality

Part 1

Various Notes

(some important bits)

Part 2

How Do 'Immersiveness'

Part 1

A Few Important Notes and Background

Immersion

Immersion

The Suspension of Disbelief
of our Senses

The Suspension of Disbelief of Our Senses

Story not Hardware

Anticipating & Reacting Naturally (reflexively, dynamically, engaged)
to the story
without mediating through an
active understanding of the medium.

Don't make me think about the lies

"I go there" vs. "I push the teleport button"

Engagement is Harder Not Easier

Trap user in headgear and blast photons in their eyes to engage! Or else!

We are asking more from the user

Users expect proportional return for their investment

Users signed up for immersion,

we need to keep our side of the contract

Input To User

1. Presentation
3. Response

VR is Good at this!

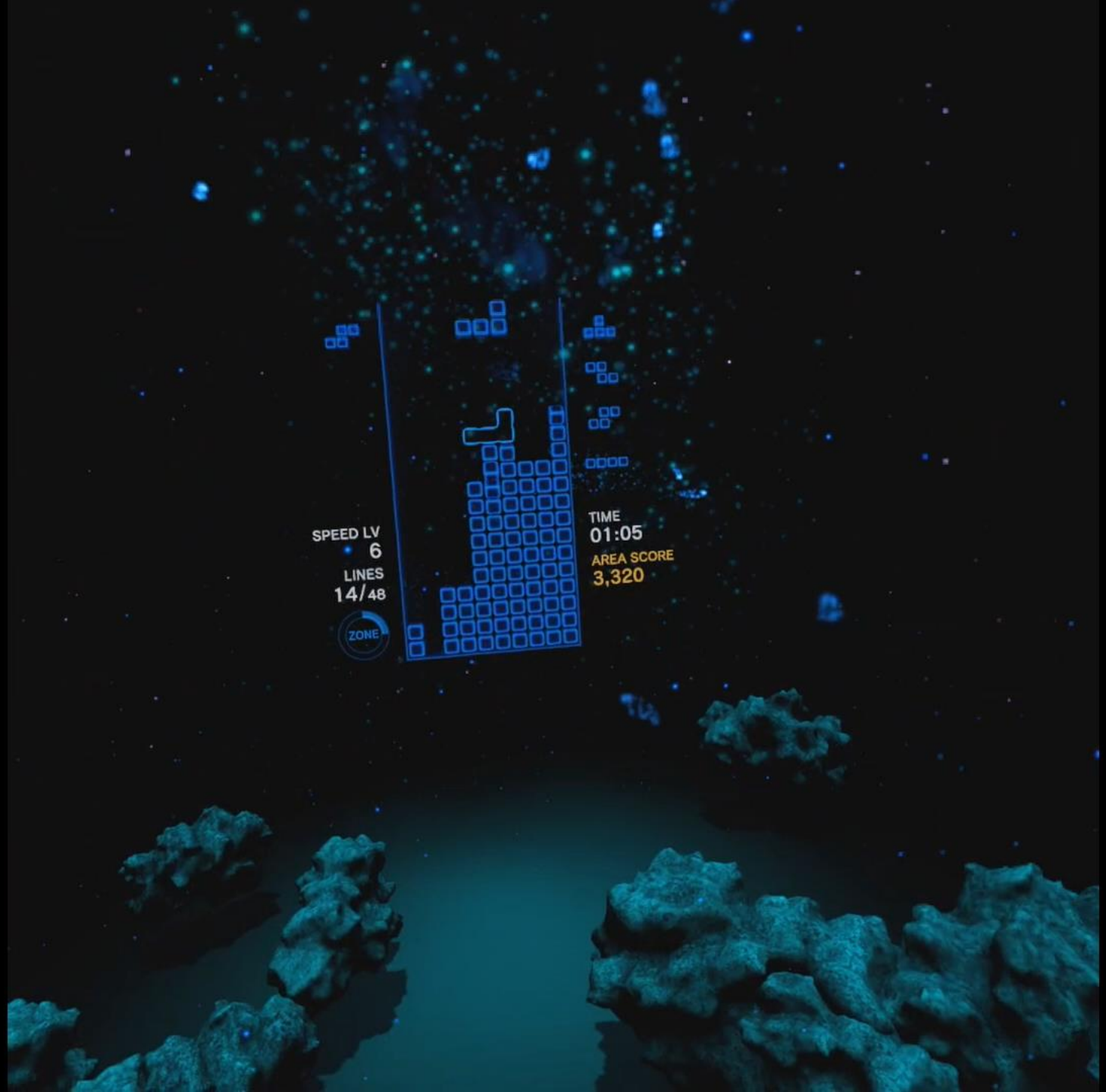
User

System

Output From User

2. Action
4. Action

But Bad at this!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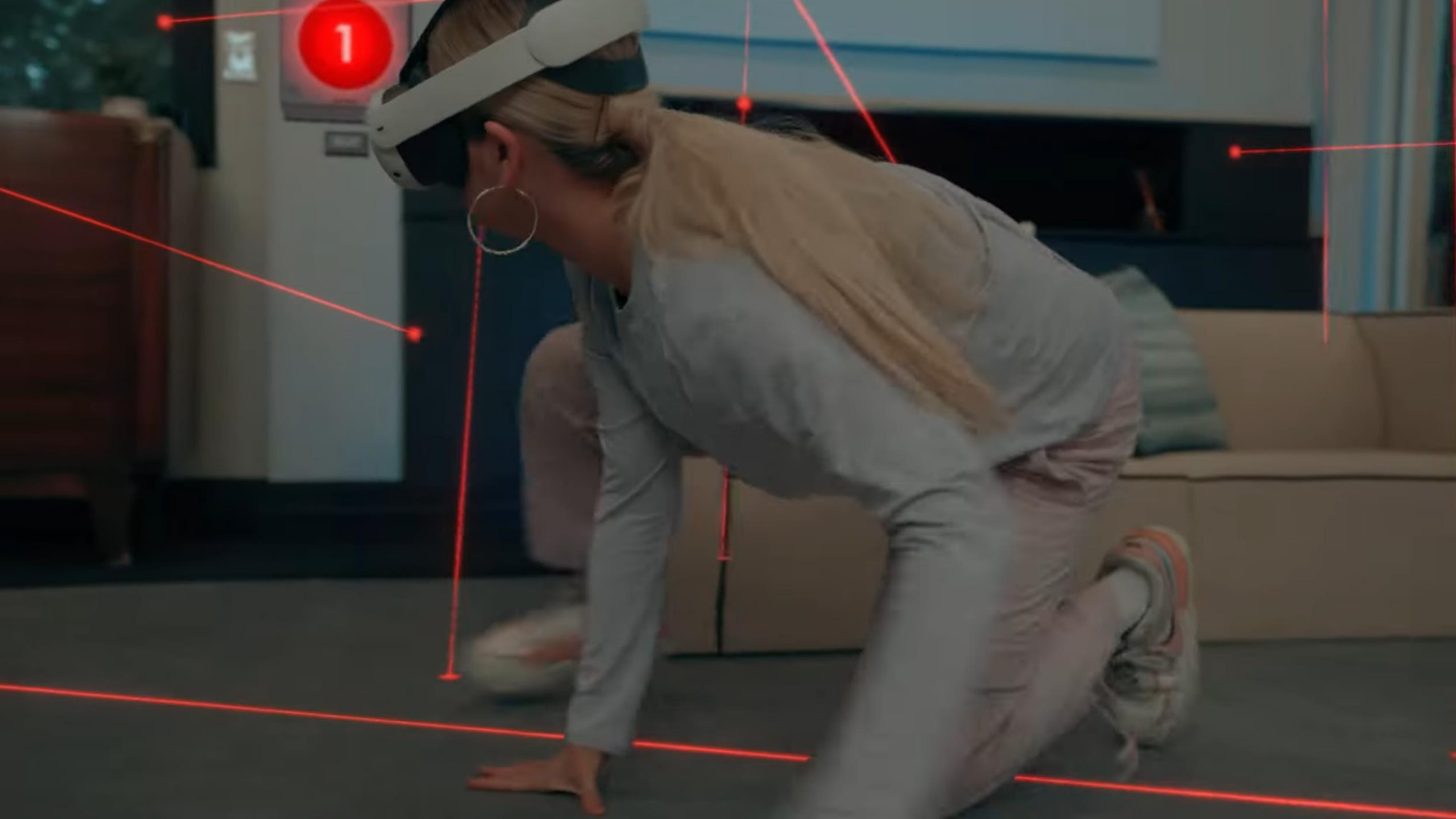

You Don't Need First Person To Tell VR Stories


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SIROK

Part 2

How To Do Immersion

Perception

Design For Perception

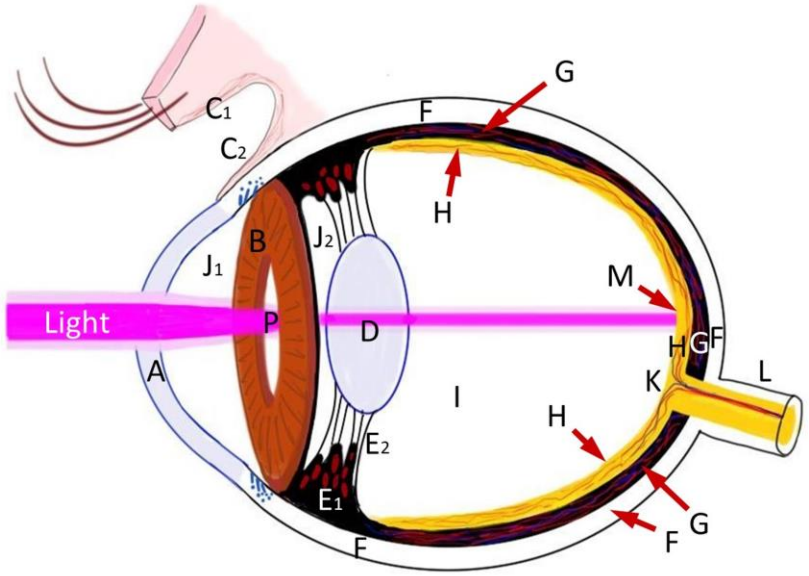
- With an understanding of the how our senses work

The Medium is Perception

- Manipulate our Relationship to The Space (e.g. scale)

You Don’t Get Depth For Free

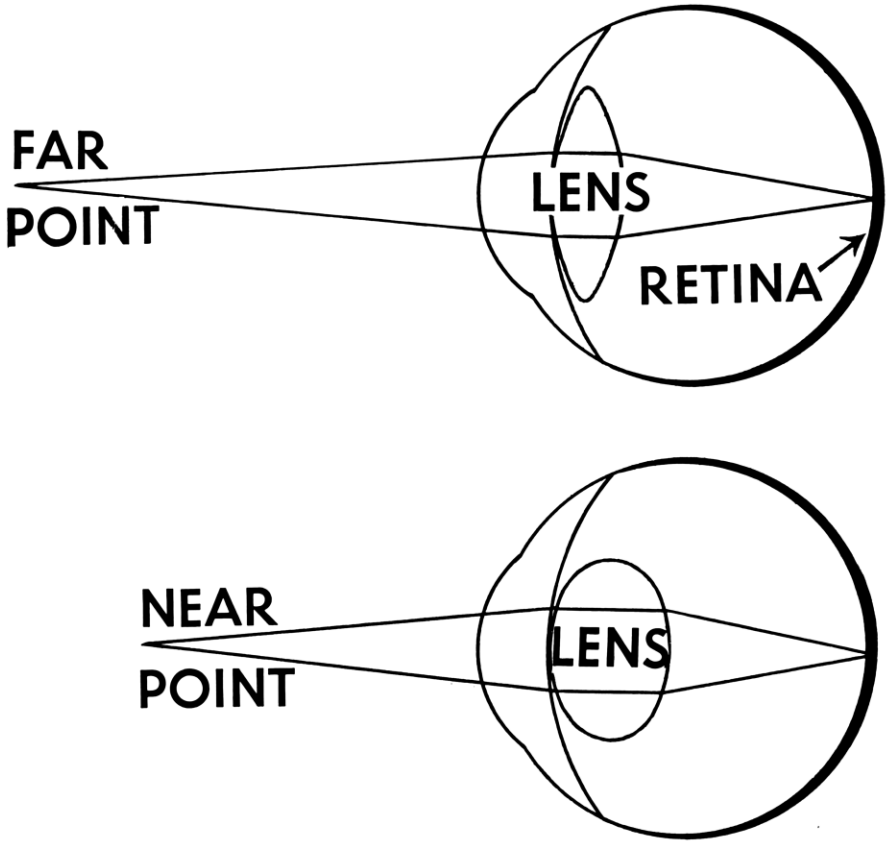
How Vision Perceives Depth



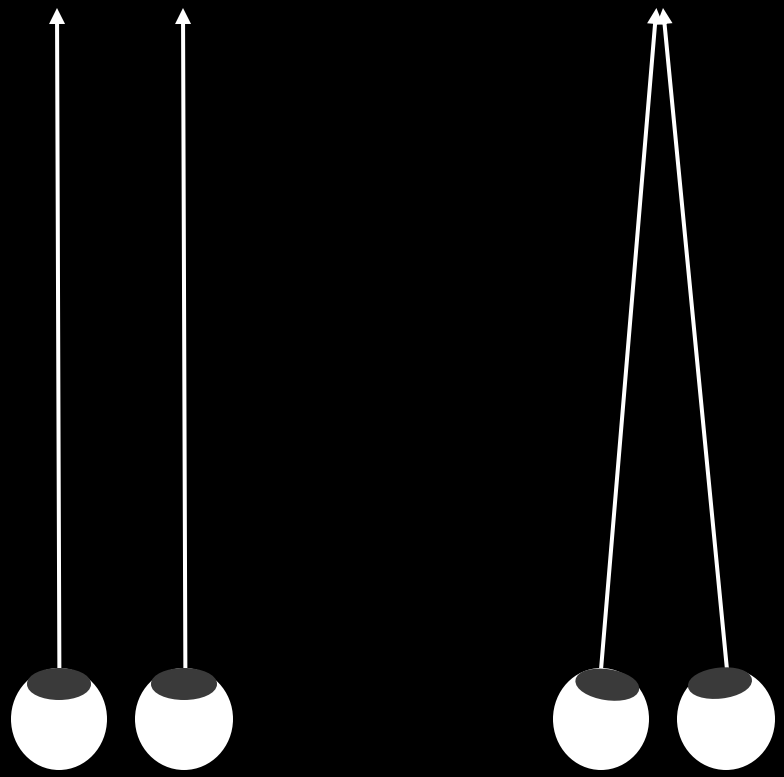
A list of depth cues to design around

Stereoscopy

Accommodation

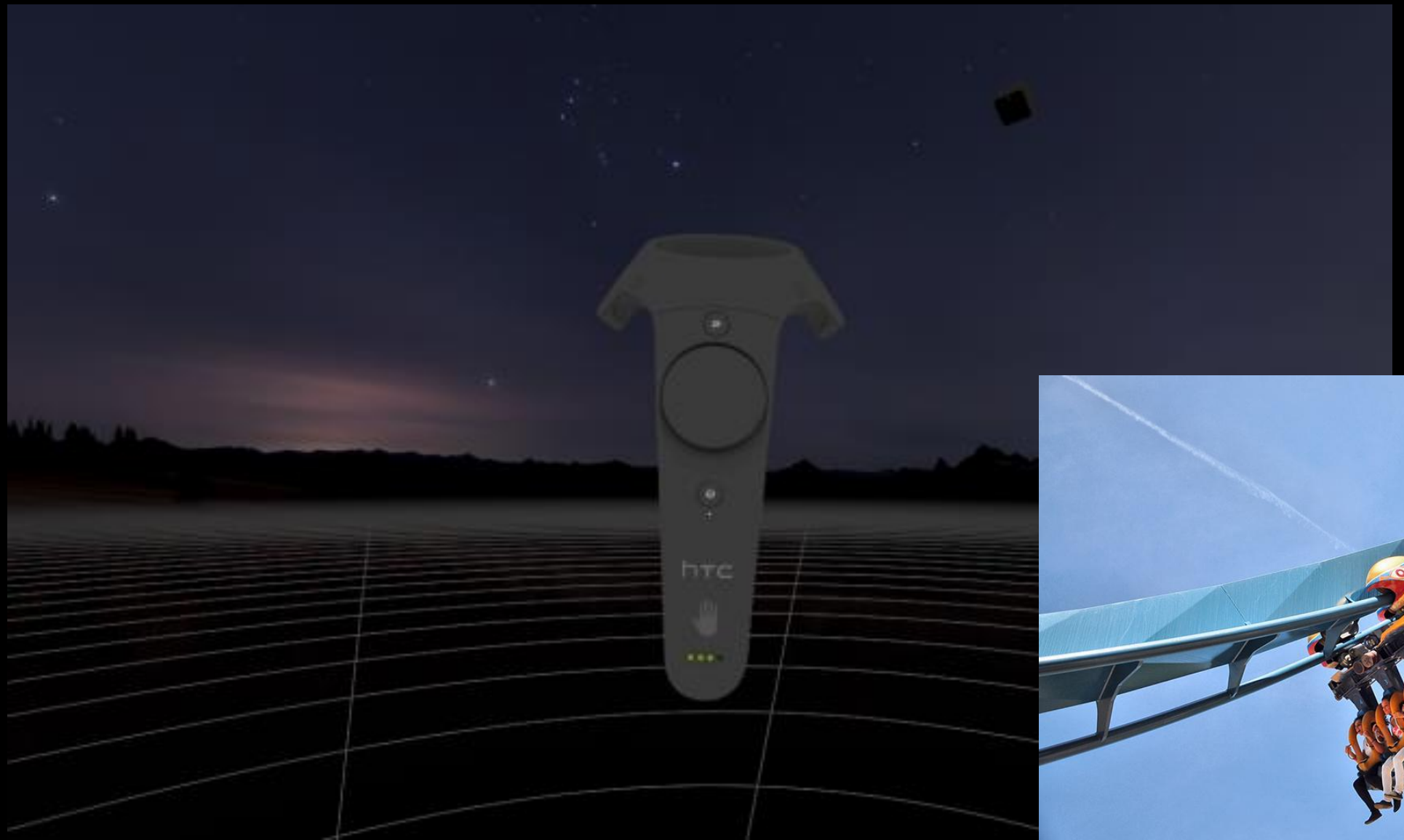


Convergence

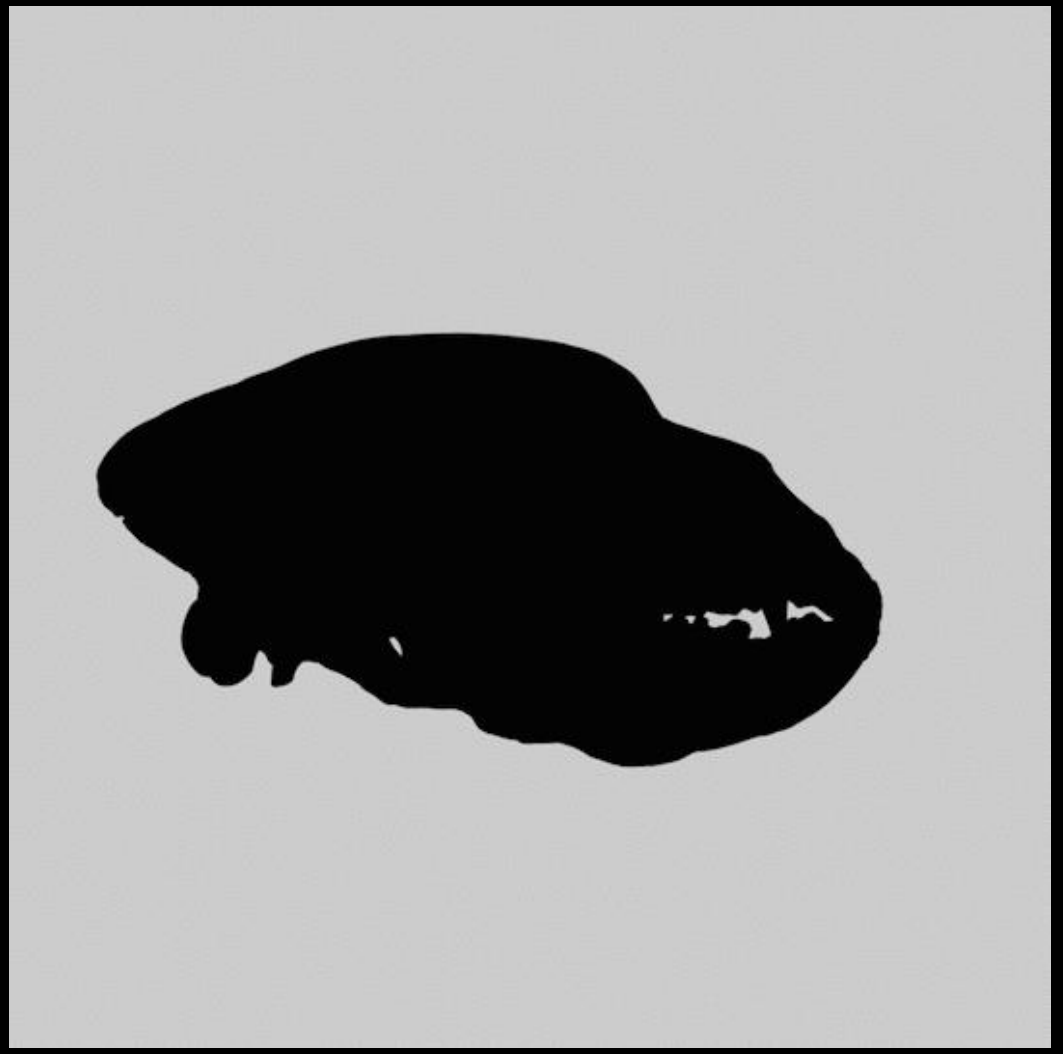


Perspective

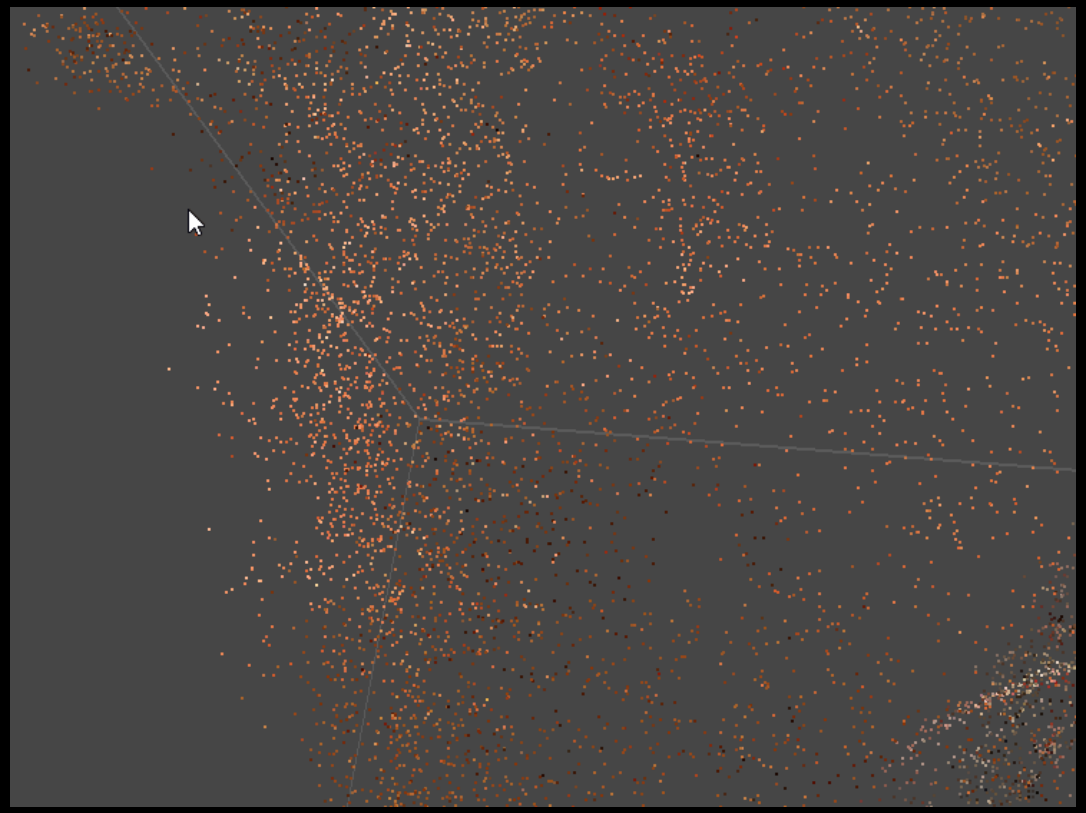
The Ground Plane



Kinetic Depth Effect

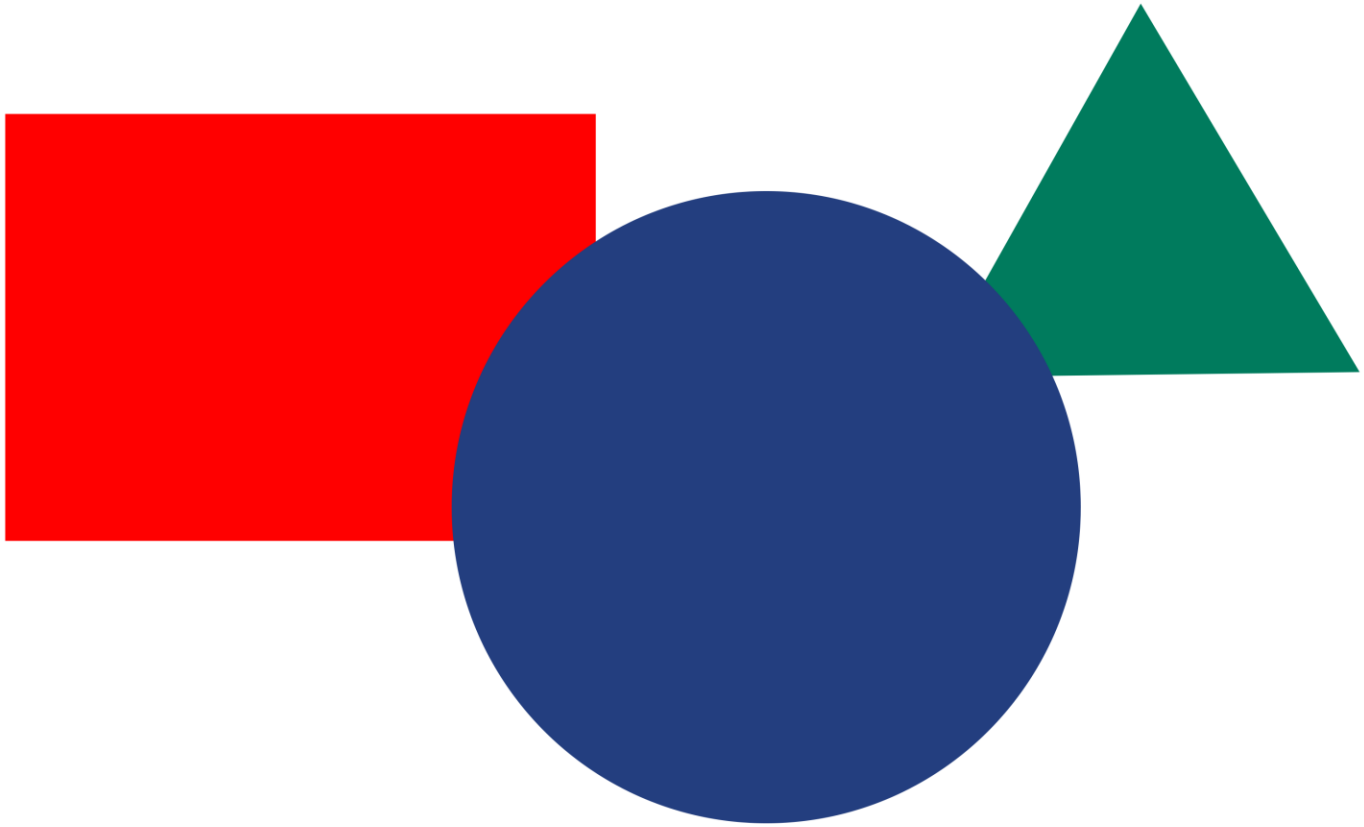


Motion Parallax



Dust Motes

Occlusion



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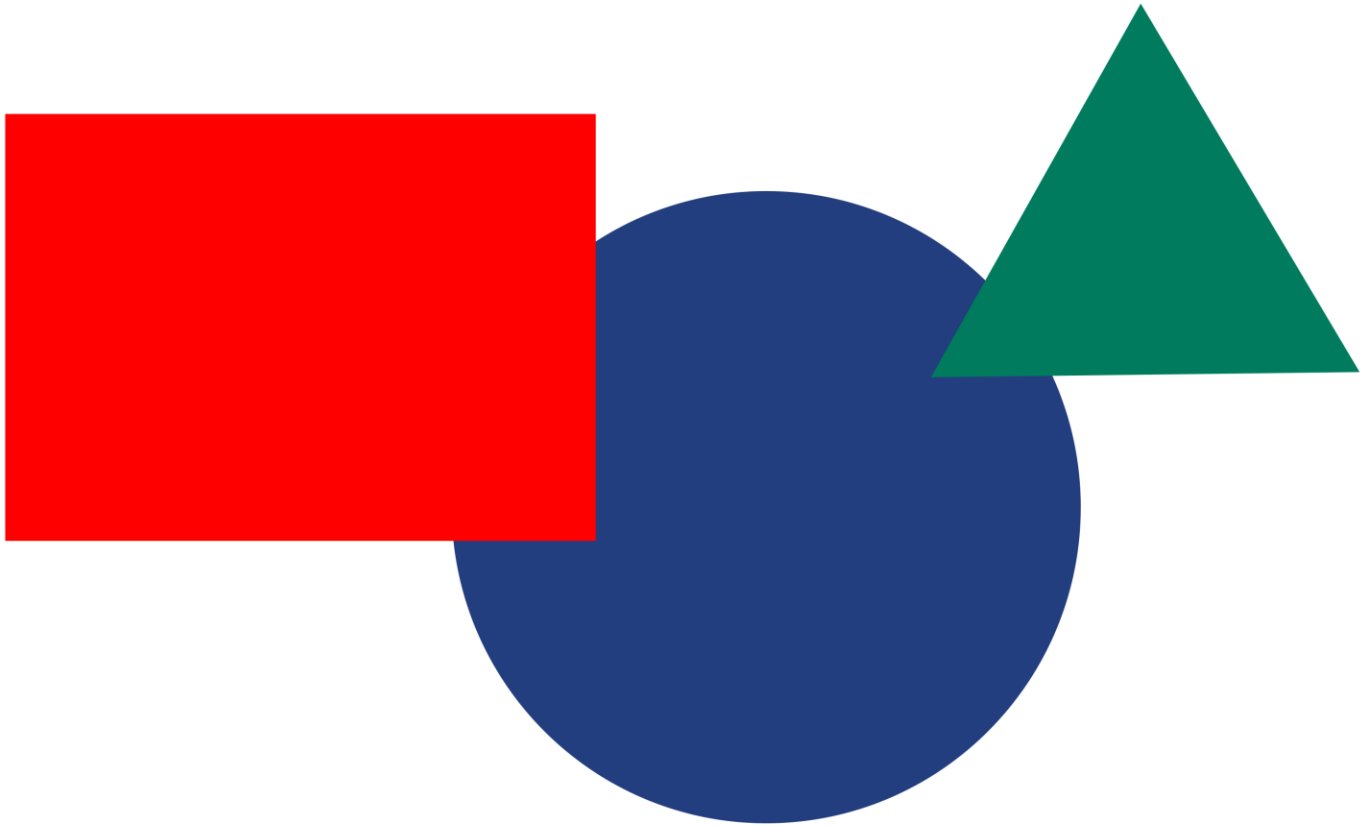
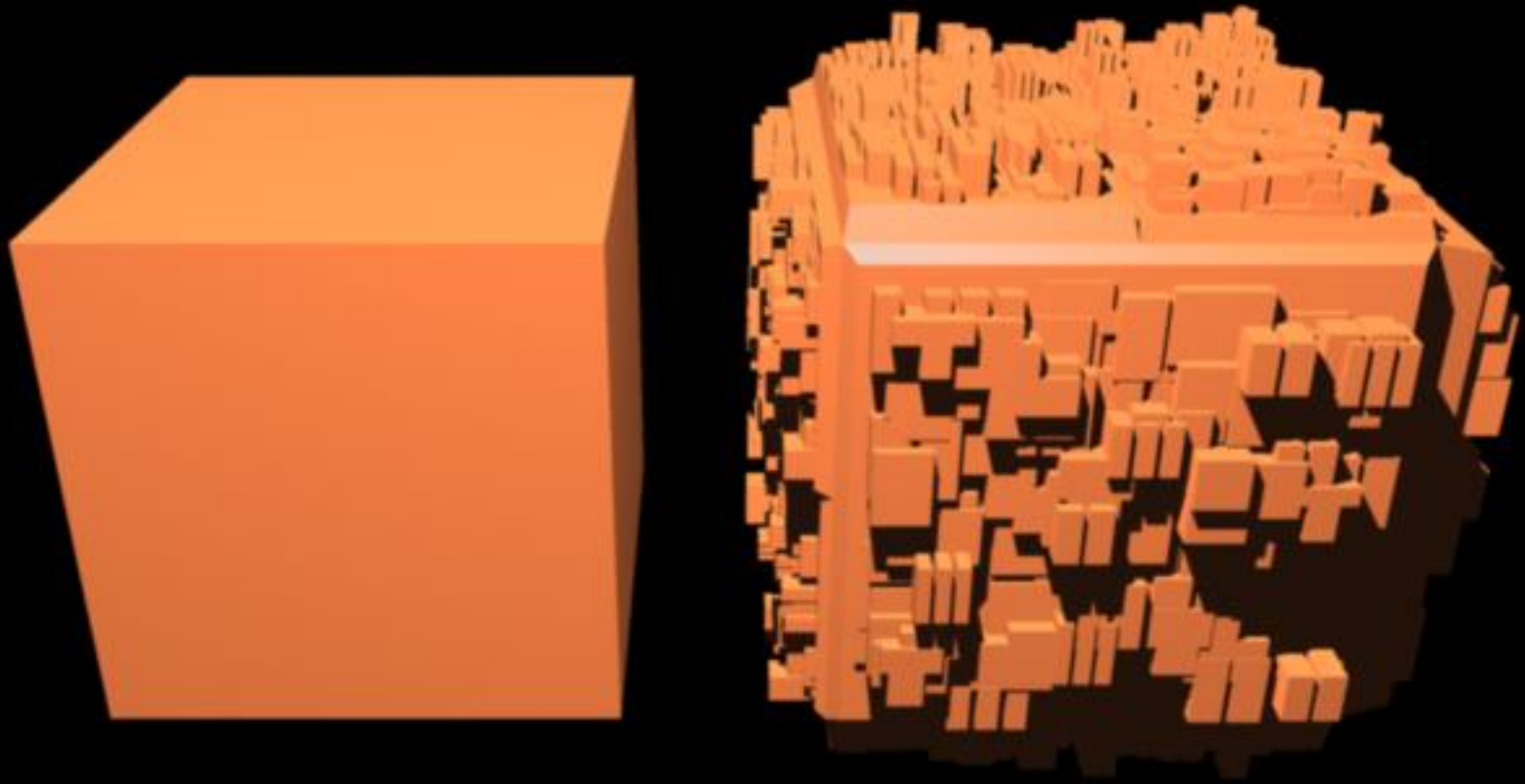
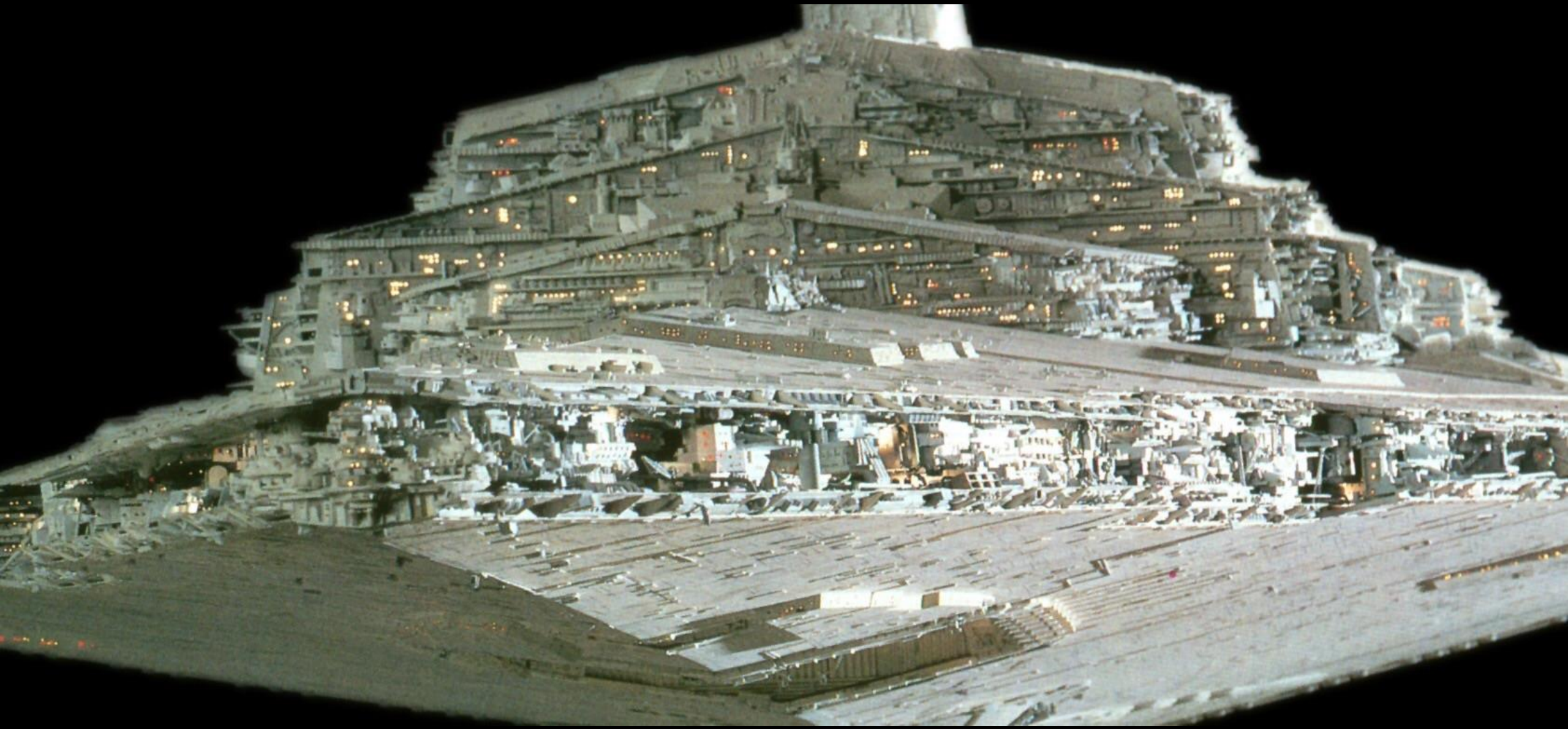


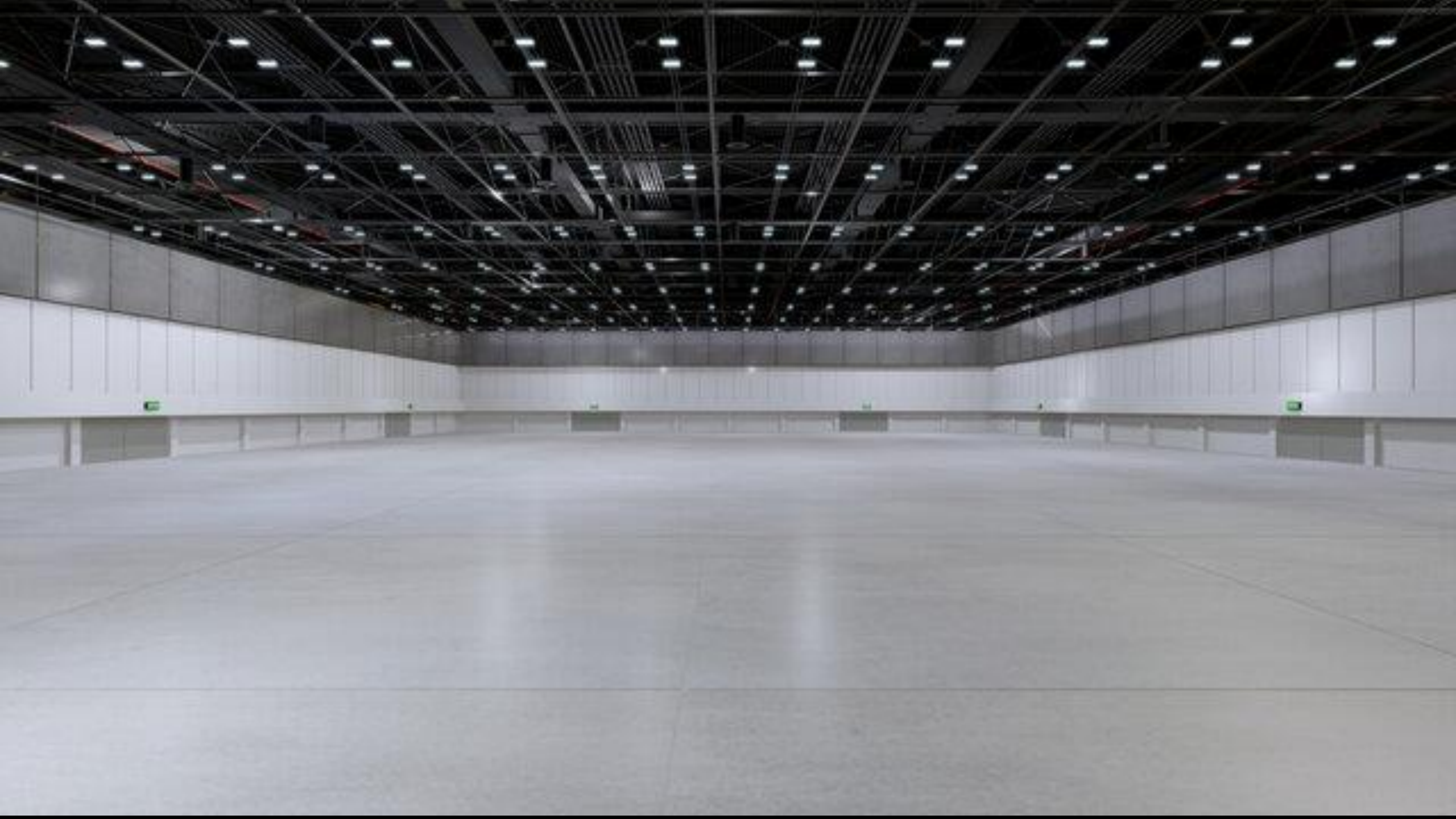
Familiar Size

Similar Size

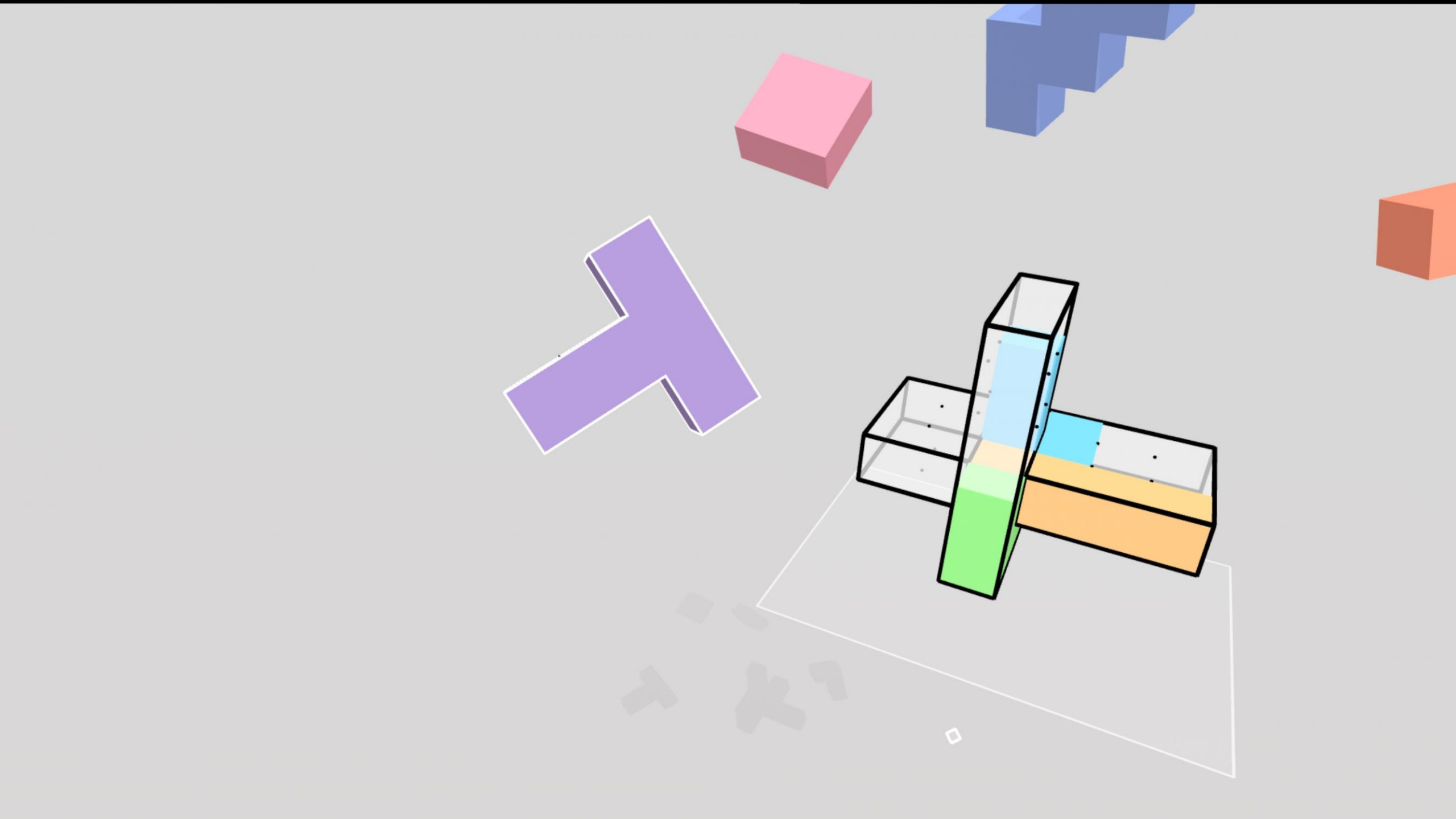
Texture & Detail Level

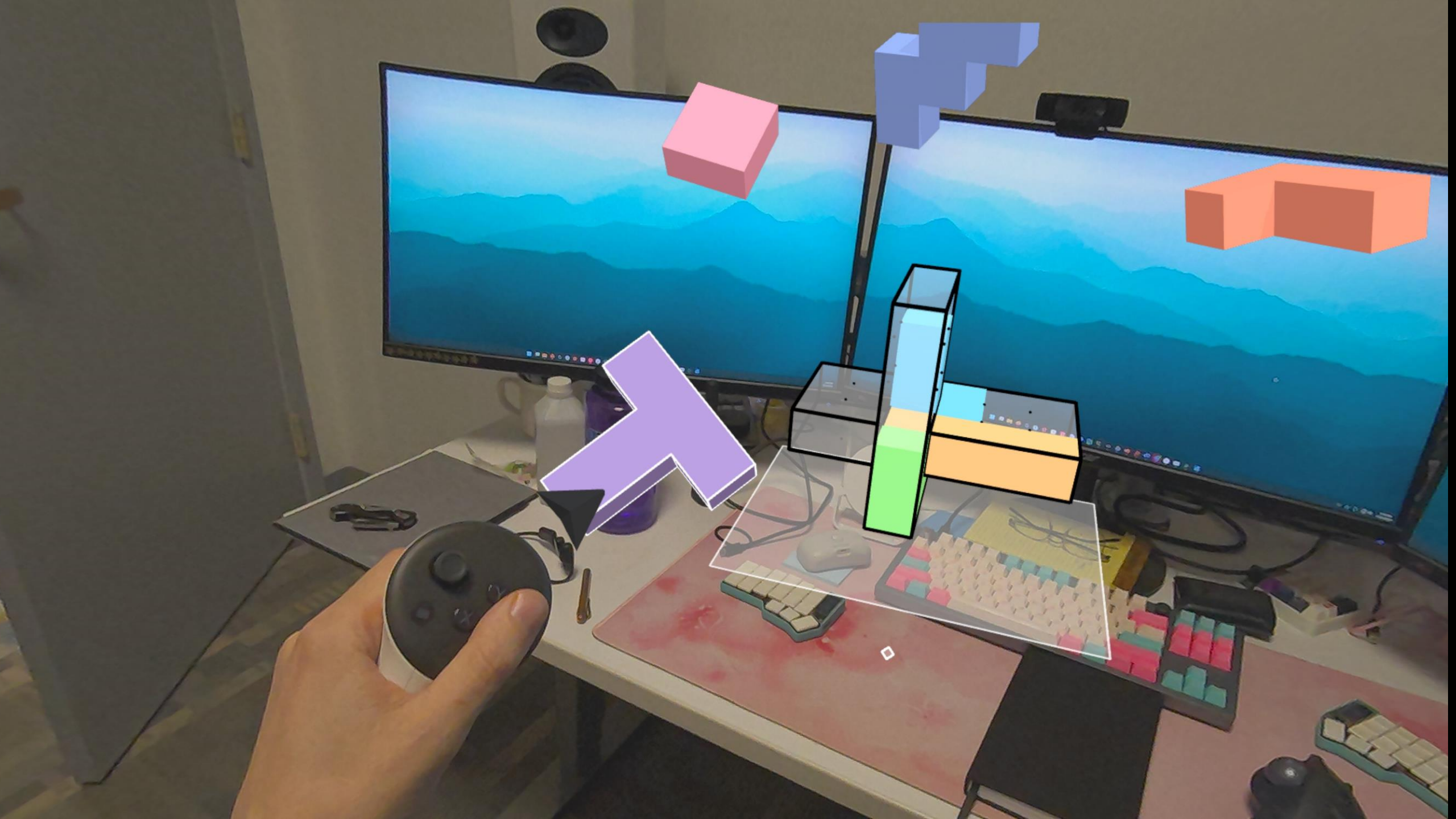






Atmospheric Gradation



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Pizza Kitchen
6.1K were here today · Destinatior
In Meta Horizon Worlds
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	Close?	Far?	Looking at?	Periphery?
Stereoscopic	X		X	~
Perspective		X		X
Ground Plane	X			X
Occlusion	X	X	X	
Parallax & Kinetic Depth	X	X	X	X
Atmospheric Gradation (fog)		X		X
Accommodation & Convergence	X		X	
Texture Detail	X	~	~	X

Sound Design Takeaways

Audio Spatialization

How do ears work?

…you aren’t all wearing headphones

Use Your Tools

A ‘Head Transformation Function’ is doing the heavy lifting

Reverb Zones

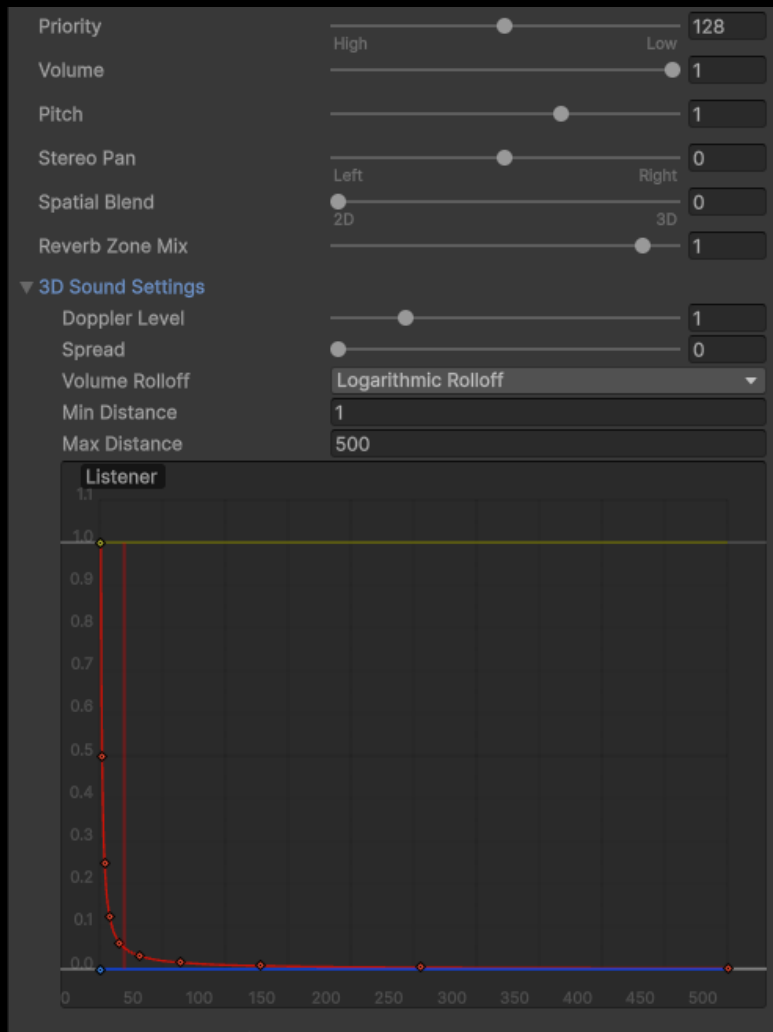
Mixing Groups

Doppler Effect!

(put sounds on things that move)

FMOD shenanigans

Use the Spatial and Falloff Curves



Use the Spectrum

Easier to localize sounds that are ‘frequency rich’

- Ear Shape!
- Phase Difference Detection

Check the boxes: Lows + Mids + Highs

It's Okay To Spatialize Non-Diagetic Audio

Hard to mix 2D & 3D audio

- 2D: Headphones (stereo-mixed to sound 'in my head'). Moves with head.
- 3D: Non-headphone (spatialized) audio. Moves with world.

Default:

Every Audio Source Should be from somewhere

Use Non-Spatialized Audio With Intention

"If you're going to break a rule, you have to do it on purpose!"

– Prof. Steve Timm

Arrange Many Small Sounds

Think ‘point lights’ not ‘sun directional light’

Fake Reverb is okay!

More audio sources!

The default range is usually wrong

Many Depth Cues = More Immersion

More Immersion = Power for the Storyteller

Immersive storytelling go brrr

Audience go ‘woah’

This is a transition slide

Haptics and proprioception and balance and these things matter too

Their exclusion here is not because they aren’t important

Depth cues make everything better

Depth cues make everything better

Vibes

‘Design for Perception’ is additive to existing storytelling principles and objectives

VR is an aesthetics machine

Vibes

The Rule of Cool

Make emotionally impactful environments

First Person Poetry

Introduce Signifiers and Repeat Them

motifs are done with perceptive elements

Realism is a Bad Design Principle

It's not bad… it's bad for Designers

It's a meaningless objective

It does not help artists make decisions

Realism is Boring

By definition: Being Realistic means things do not have a secondary layer of meaning assigned to it

It's bad for storytelling

Think 'Music Videos' not 'Animal Planet'

Conclusion

Don’t put me in a room and tell a story

In VR, the room is the story

Thanks

Make weird stuff

hdyar.com/talks/sona2026