

Virtual Reality Video: Storytelling and Tools

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Thanks to Cuong Nguyen for some slides

This is a new artistic medium

It is really distinct from regular video?

What are its properties? How will it develop?

Will it be big? What technology does it need?

I'll present some new video editing interfaces





Start: the history of other media



Workers Leaving the
Lumière Factory
1895



A Trip to the Moon
1902



Battleship Potemkin
1925



Citizen Kane
1941

What does new tech do?

Transformative

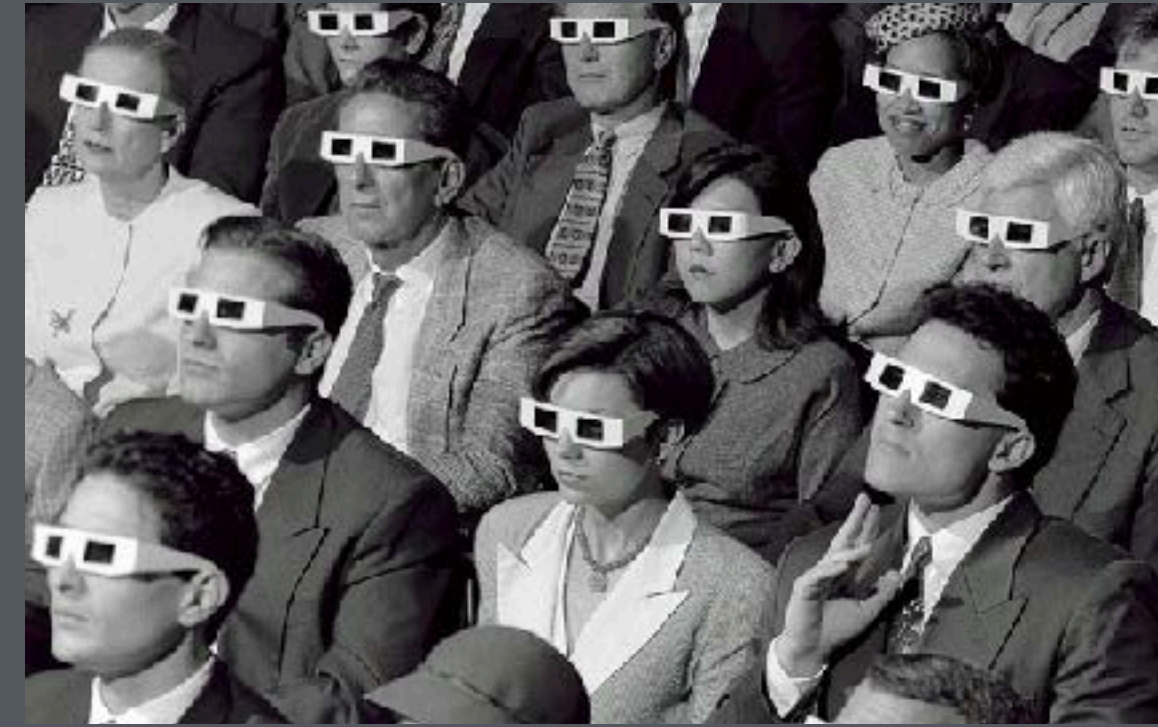


Sound



Color

Enhancing



Stereo



Smell-o-Vision; 4D

Unique properties of VR video

1. Immersion: filled field of view
2. You choose where to look



VR video is immersive: the viewing experience in VR is **very different** compared to viewing on the desktop

A viewer sees only a portion of the whole scene



VR view

360° video (equirectangular format)

The viewer must *choose* where to look

Directing Gaze in VR



“Help” by Justin Lin, Google Spotlight Story

Directing/following gaze





Jökullinn fjallgöngumaður –



– to Japanese tram speaker

Guiding attention



Invasion!

Guiding attention



Invasion!

spatialized sound
guides attention

Editing VR



<https://www.jauntvr.com/title/30c9724237>

Invisible, V: 1:10

Watching VR without careful direction is stressful or boring

Directors will learn better techniques

Directors and audiences will co-adapt

How will we watch?

Will we watch standing?



or sitting?



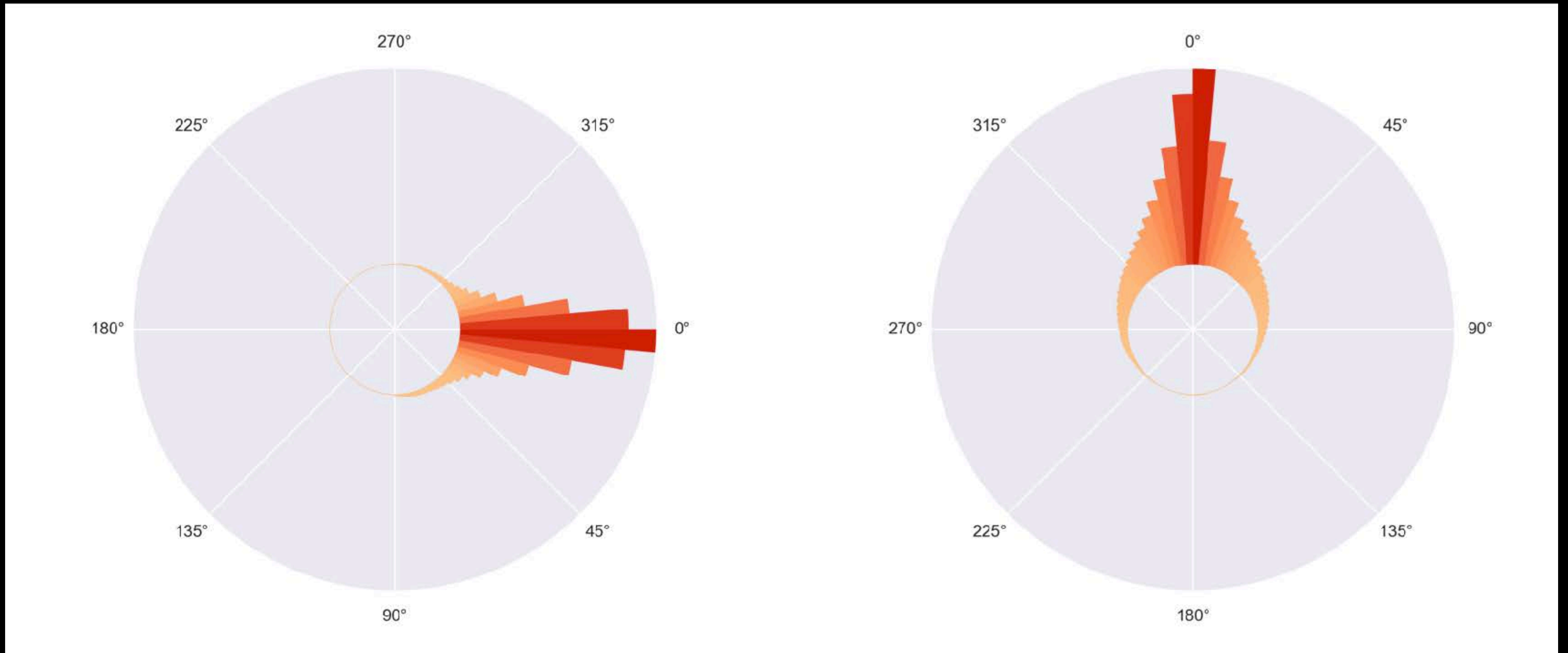
or in a special chair







Do people look around?



<https://blog.vrtigo.io/do-people-view-all-360-f60b858059fe>

Google VR180



Places to look for clues

3D VR Animation



Henry, Oculus Story Studio



Pearl, Google Spotlight Studio

Documentary VR



Documentary imperfections become film styles



Shakycam



Awkwardness



Lens flare

Immersive Theatre



Sleep No More
(New York City)

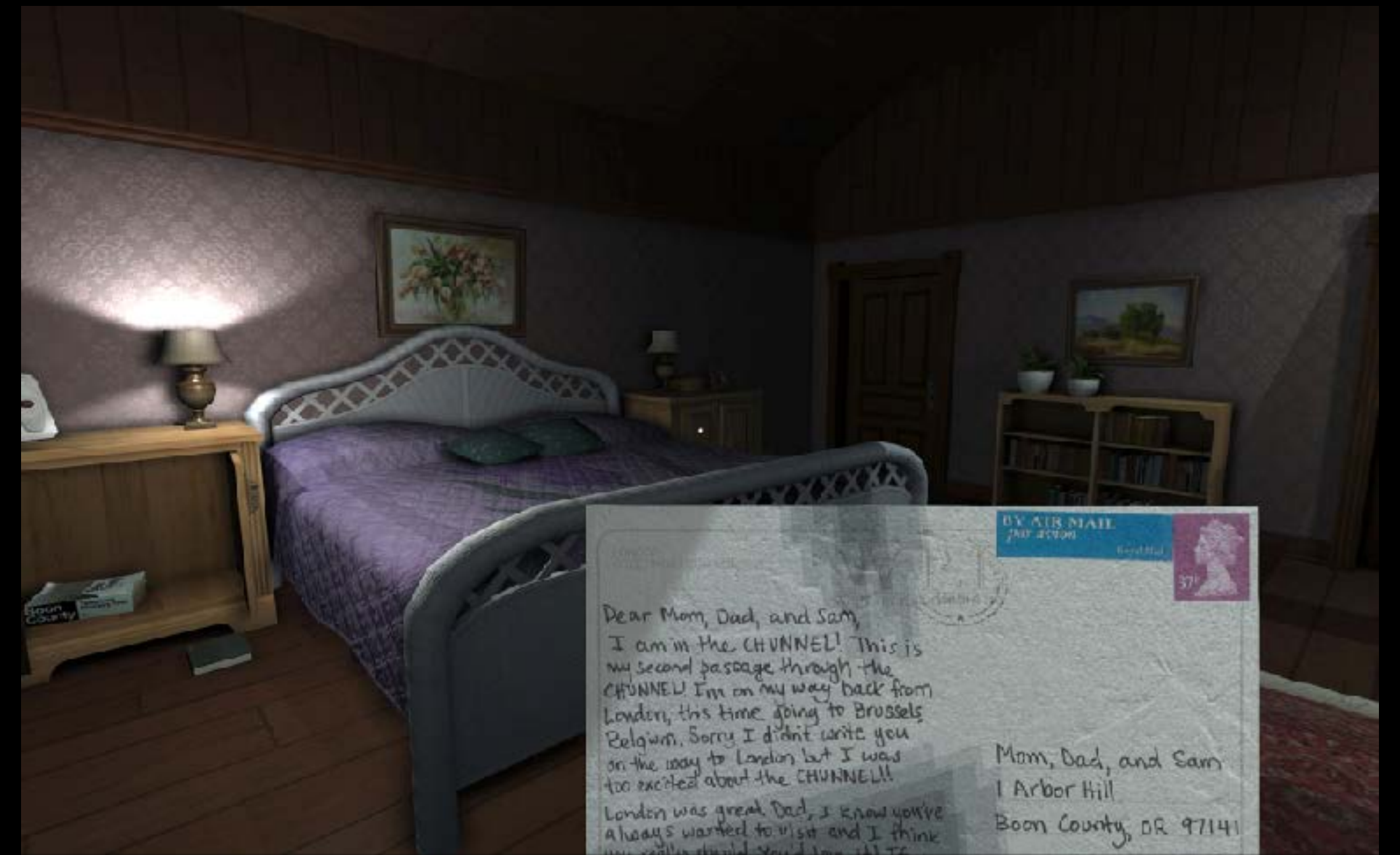


The Speakeasy
(San Francisco)

Video Games



Grand Theft Auto



Gone Home

User agency in narrative?

Narrative storytelling is a way to convey information

Hypothesis: We can't learn from telling a story

In other words, these are separate:
storytelling; hearing a story

Technology Implications

New capture problems



New capture problems



The Fight for Falluja | 360 VR Video | The New York Times

Titling



Titling

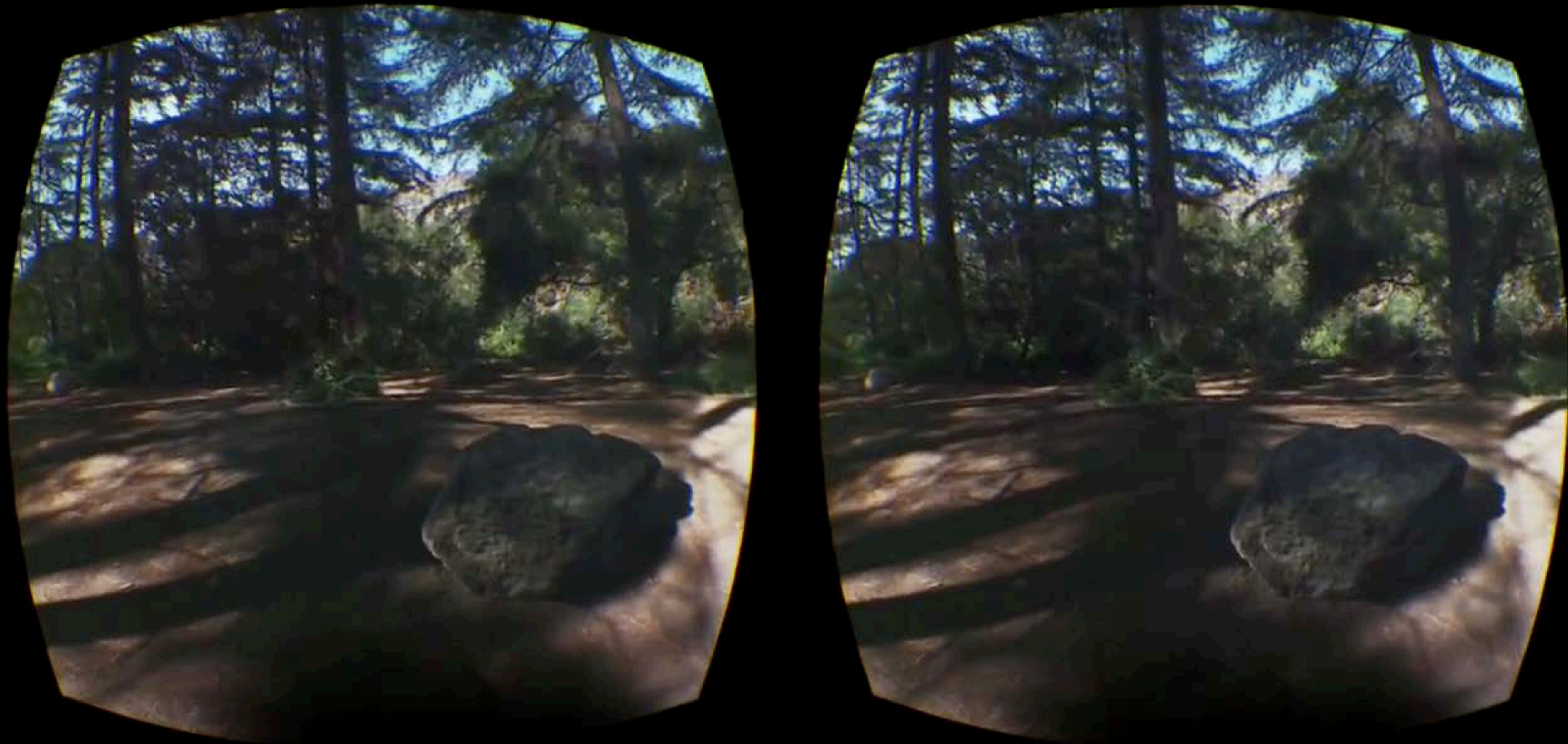


Responsive Video



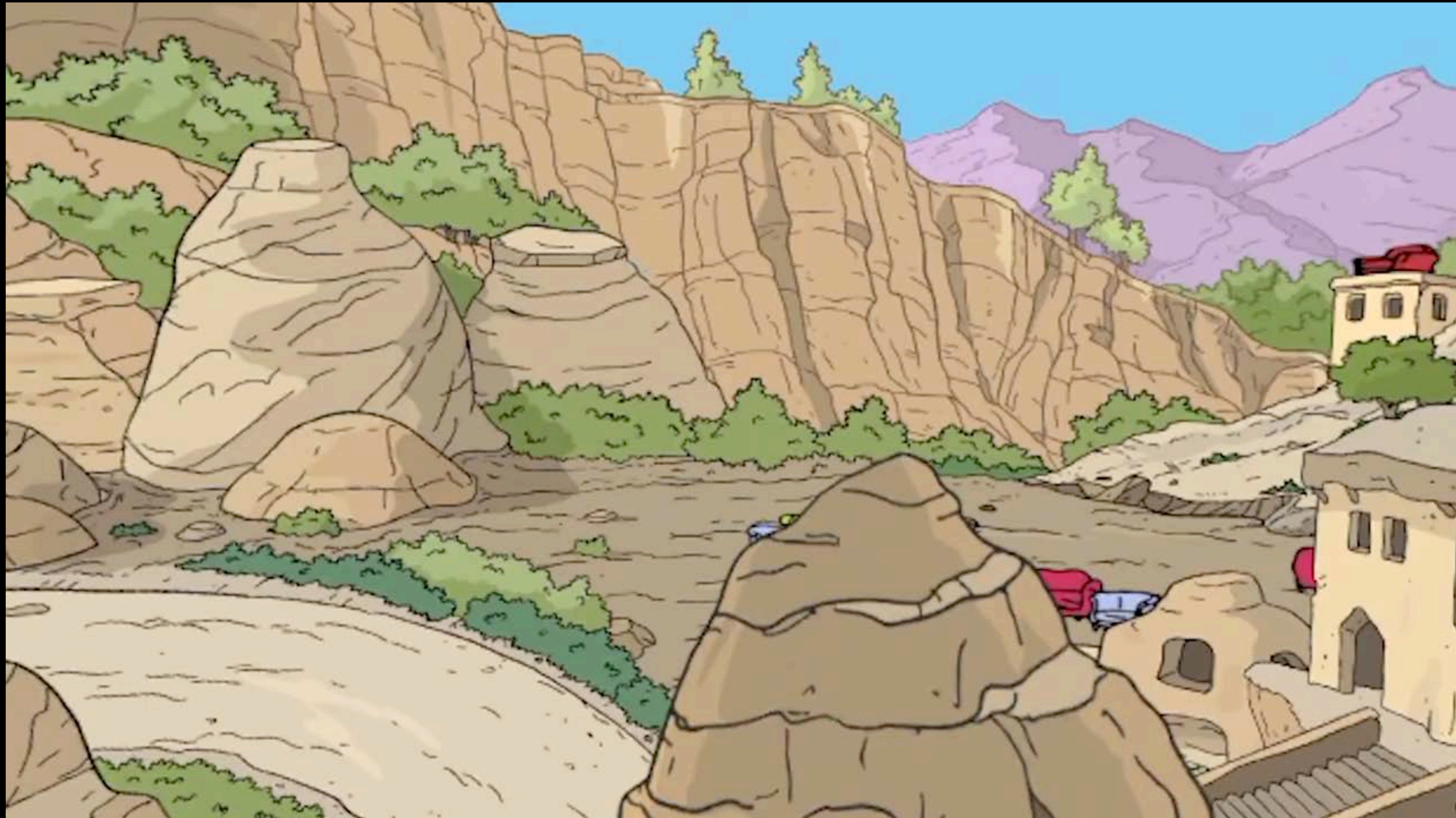
“Wild”

Responsive video



“Wild”

Google Spotlight Stories



New editing tools

Vremiere: In-headset Virtual Reality Video Editing (CHI 2017)

CollaVR: Collaborative In-Headset Review for VR Video (UIST 2017)

by Cuong Nguyen (Portland State)

with Feng Liu (Portland), Steve DiVerdi (Adobe), Aaron Hertzmann
(Adobe)

Assembly Editing **Color** Effects Audio Titles Libraries

Source: (no dips) Project: Untitled Effect Controls Captions Audio Clip Mixer: sequenc Program: sequence 1

Untitled.prproj

Name	Frame Rate	Media Start	Media End	Media Duration
sequence 1	25.00 fps	00:00:00:00	00:01:24:06	00:01:24:07
ski_2.mp4	23.976 fps	00:00:19:02	00:01:16:17	00:00:57:16
rockclimbing.mp4	25.00 fps	00:00:00:00	00:01:24:07	00:01:24:08

00:00:13:00 Fit 1/7 00:01:24:07

Media Browser **Effects** Markers

- Presets
- Lumetri Presets
- Audio Effects
- Audio Transitions
- Video Effects
- Video Transitions

sequence 1

00:00:13:00

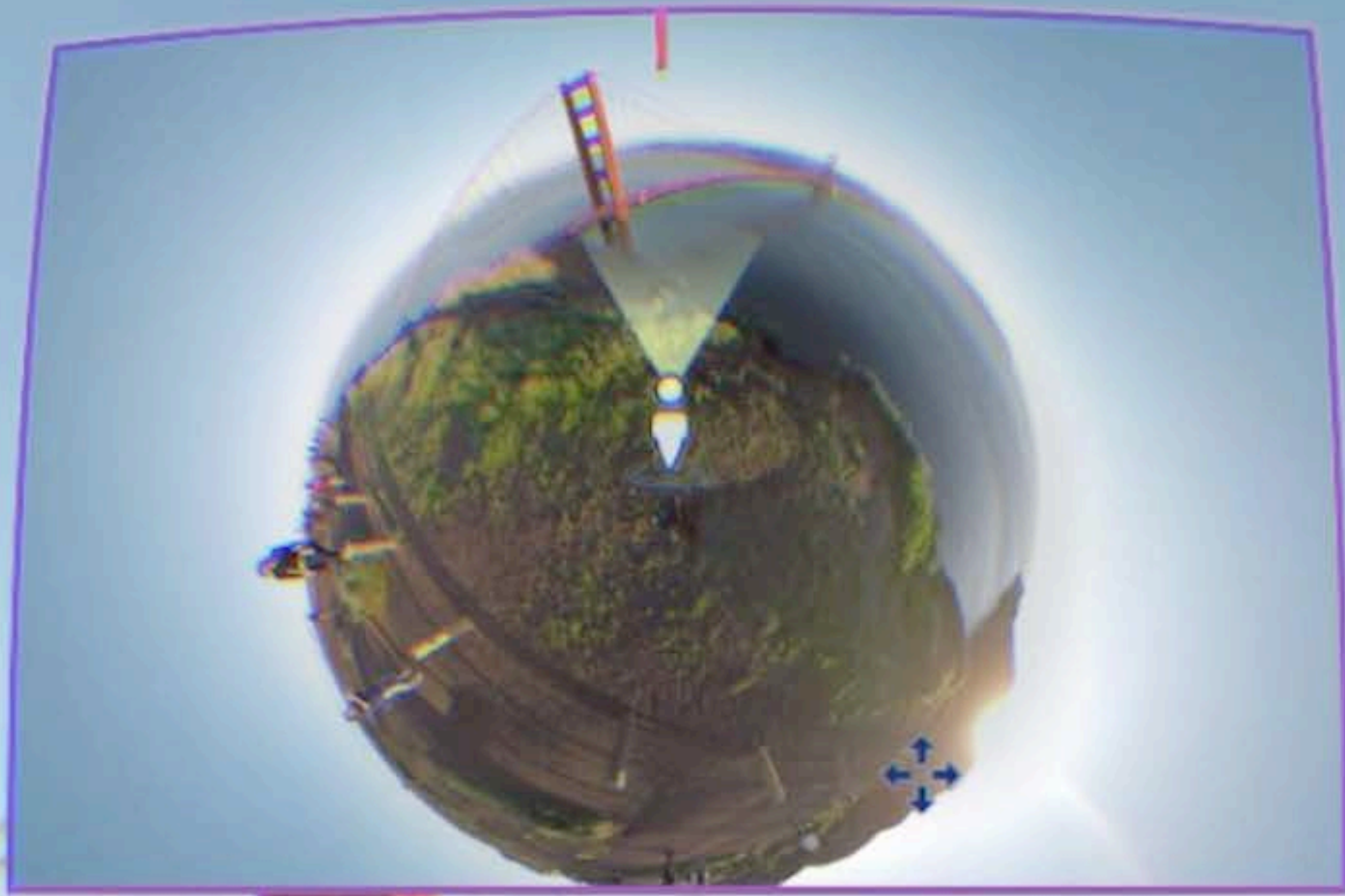
00:00 00:00:15:00 00:00:30:00 00:00:45:00 00:01:00:00 00:01:15:00 00:01:30:00 00:01:45:00 00:02:00

V3 V2 **V1** A1 A2 A3 0.0

rockclimbing.mp4 [V]

0 -4 -8 -12 -16 -20 -24 -28 -32 -36 -40 -44 -48 -52 -56 -60 -64 -68 -72 -76 -80 -84 -88 -92 -96 -100 eB





00:01:57 00:02:21

Assets/logo2.png Graphics

BayToBreakers_0 Video

SaltonCity Video

GoldenGate2 Video

ODESZA - ATL.mp3 Audio

Little Planet visualization

Adding 2D graphics to VR video is often unintuitive



DUNLOP

Sample Logo!

00:00:42 00:02:13

graphics

video

00:00:42

00:02:13



Rotational alignment



Before the cut



After the cut



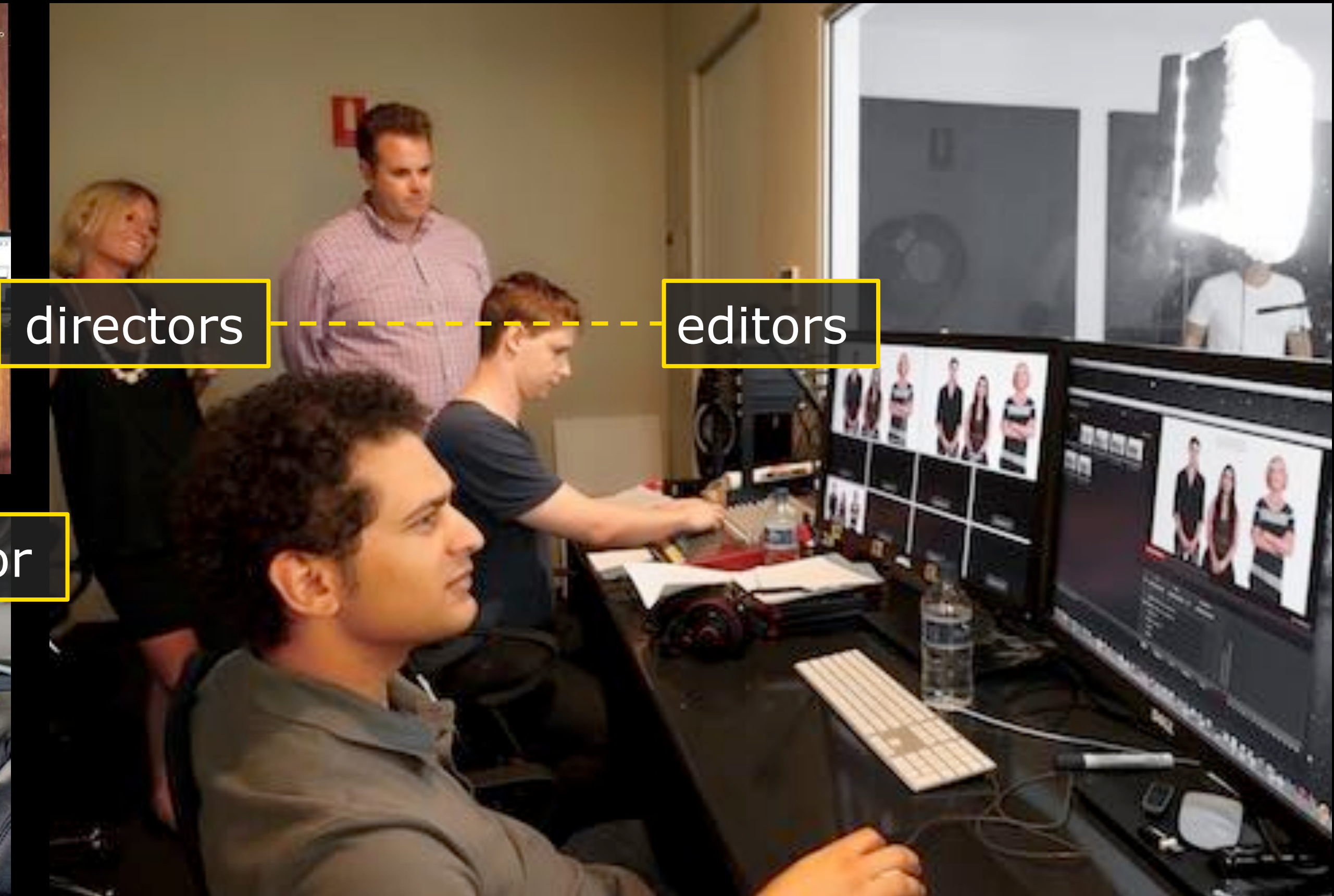
Rotational alignment

Video reviewing is collaborative



client

editor



directors

editors



editor

editor

Headset impedes collaboration in review

Did you see that?



CollaVR overview



- fast local network
- media files are local
- shared interactions



Viewport visualization

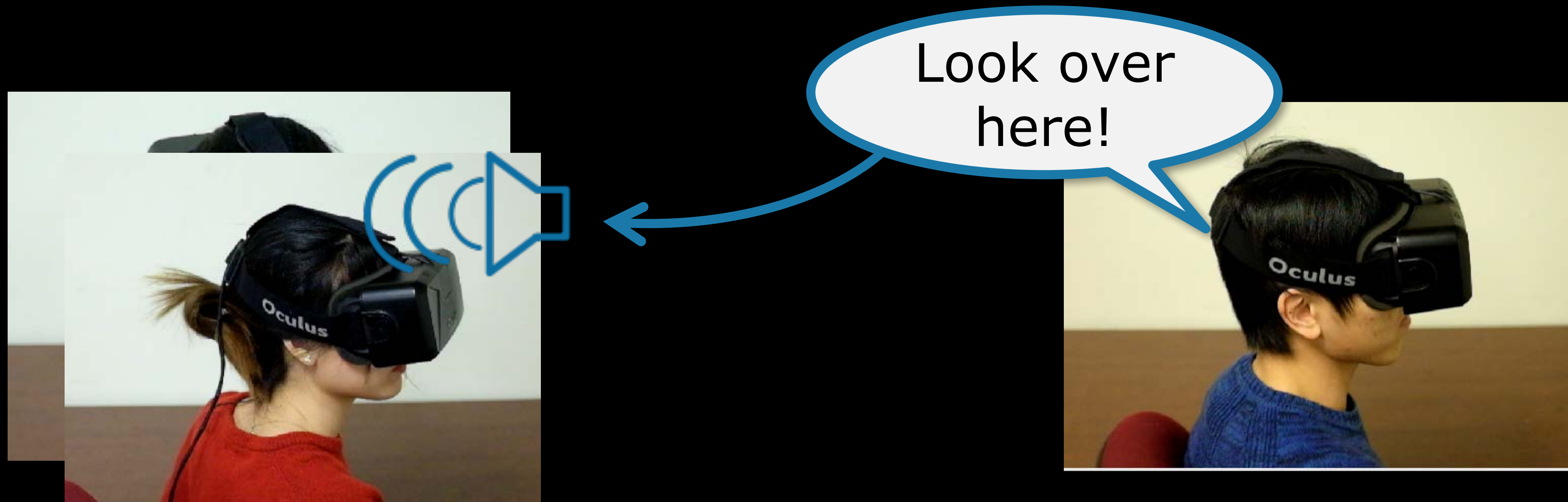


Viewport visualization

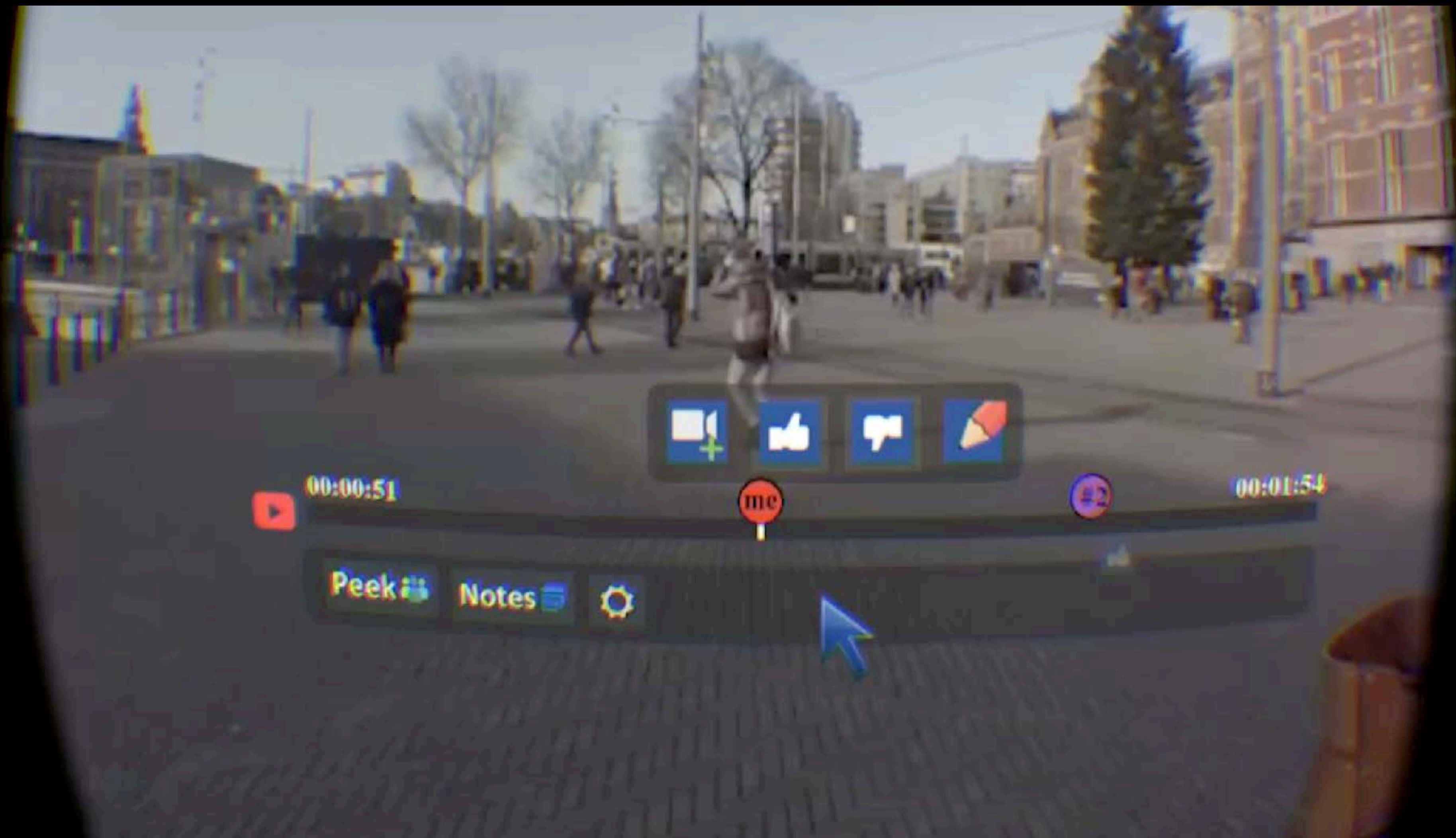


Spatialized voice chat

The audio voice chat is spatialized with the view direction of the speaker to further support spatial awareness



Activity visualization



Peeking



Follow in time



Summary

- VR is an exciting, evolving new medium
 - The viewer chooses where to look, which has many implications
 - We need technology that enables new art
 - Let's make it happen!
-
- Video editing papers:
<http://www.dgp.toronto.edu/~hertzman/>
(UIST paper coming very soon)

