

GDC

March 21-25, 2022
San Francisco, CA

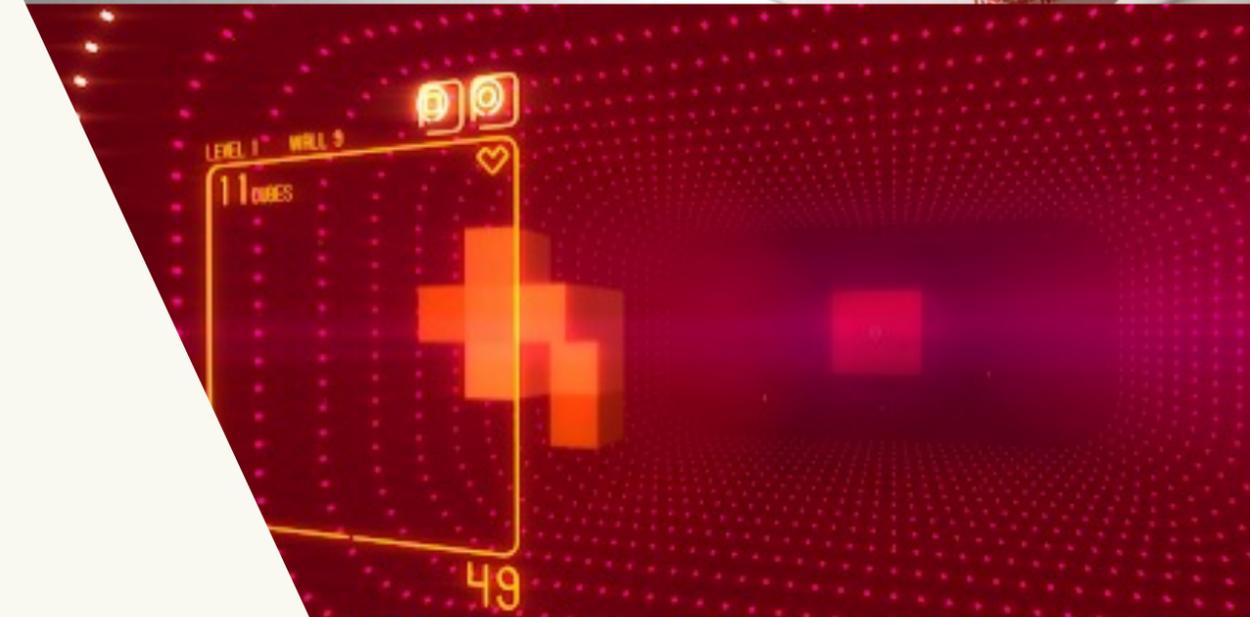
What FMV can teach us about volumetric videogames

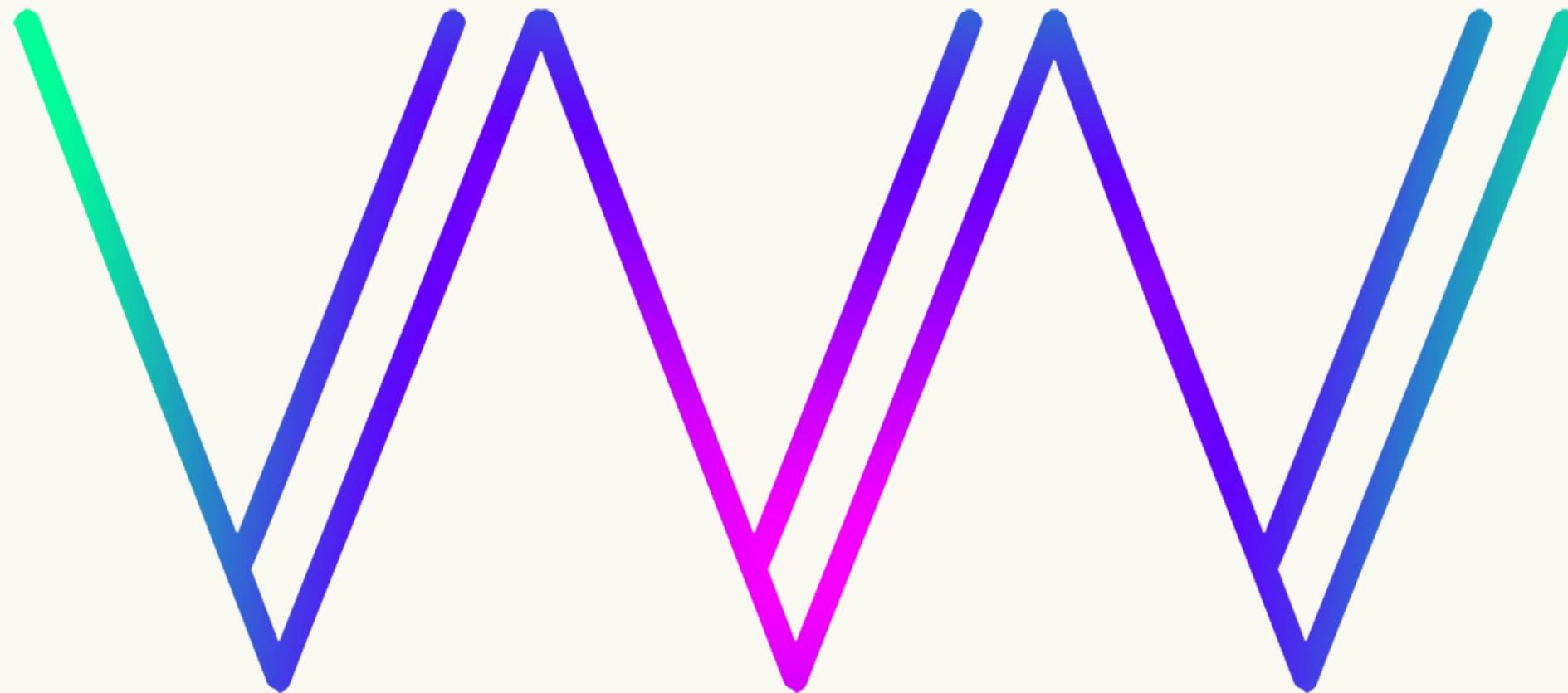
#GDC22



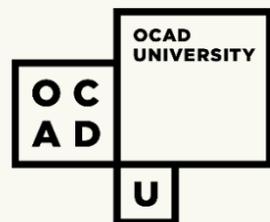
About Me (Cindy)

- Associate Professor (Digital Futures), OCAD University, Toronto
- Co-Director, *game:play Lab*
- kokoromi (*SUPERHYPERCUBE* (PSVR), *GAMMA*)





volumetric video in videogames



Sheridan

scatter

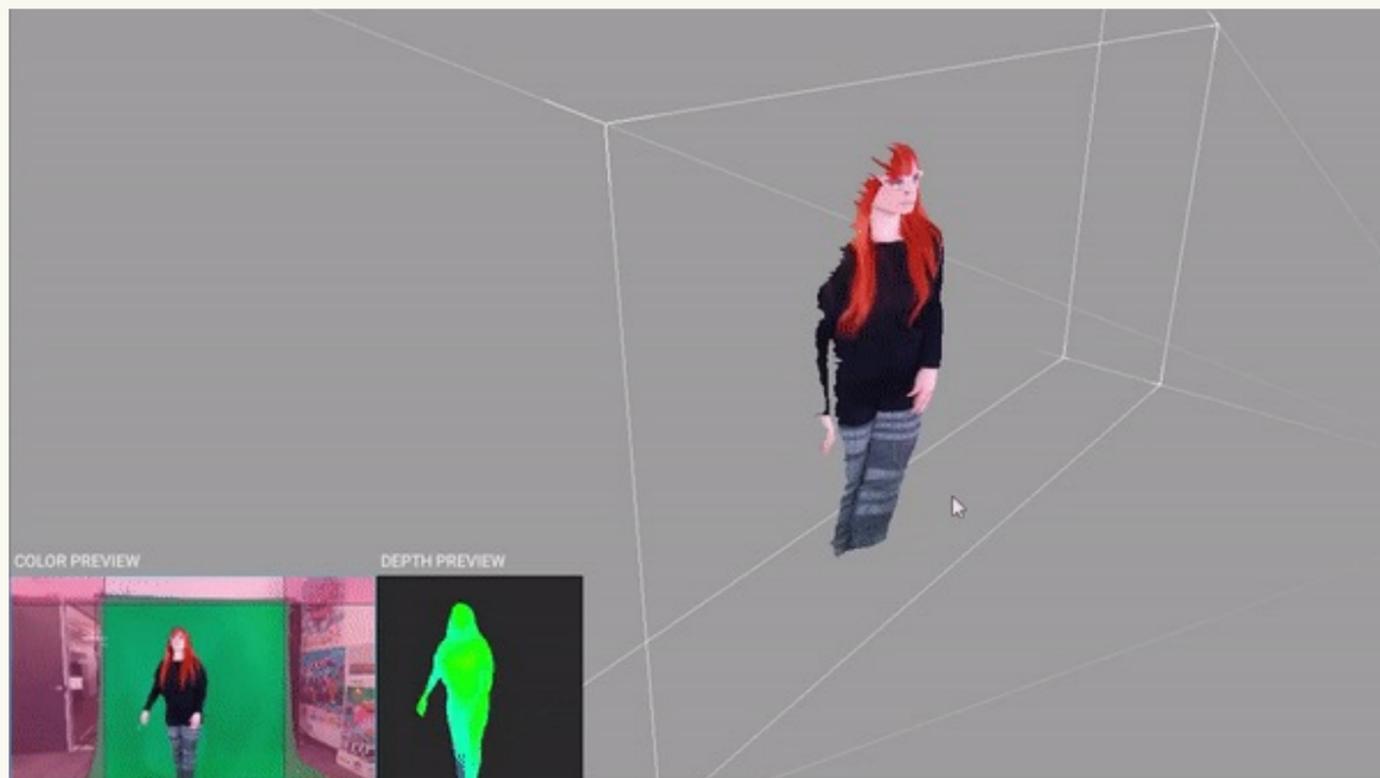
This is a design talk

I will not be talking about:

- Puppeting (rigging and animating capture)
- Optical holography
- Holographic display
- Still volumetric capture (photogrammetry)
- How/where to do volumetric production
- Volumetric video in cinematics

What is volumetric video?

Depth data mapped to video data, to create a volumetric 3D image, similar to a *hologram*. Sometimes also referred to as *volcap*.



The Changing Same
(Dir. Joe Brewster,
Yasmin Elayat, Michèle
Stephenson, VR, 2021)



Demonic (Dir. Neill
Blomkamp, short film,
2021)

*Afterworld: The Age of
Tomorrow* (Dimension
Studio for Balenciaga,
videogame, 2021)



My Universe (BTS &
Coldplay, music video,
2021)

Why is VV so interesting for XR?

- Captures motion (not still like photogrammetry)
- Has actual 3D depth (not just the illusion of depth)
- Does not enforce a fixed perspective (allows 6DOF)
- Is a recording: captures a “real” subject/performance photographically

Design challenges for videogames

- Volumetric video is recorded, and recording comes with material constraints
- It tends to be more linear and durational, and thus more static, than animation
- It's computationally expensive and storage intensive
- Can demand different pipelines and competencies (video, not animation)

Why FMV?

- Almost all game design best practices come from *animated* games
- FMV (full motion video/interactive cinema) game designers face similar *video* challenges
- These games demonstrate design solutions that may cross over to volumetric video
- **VV is FMV**

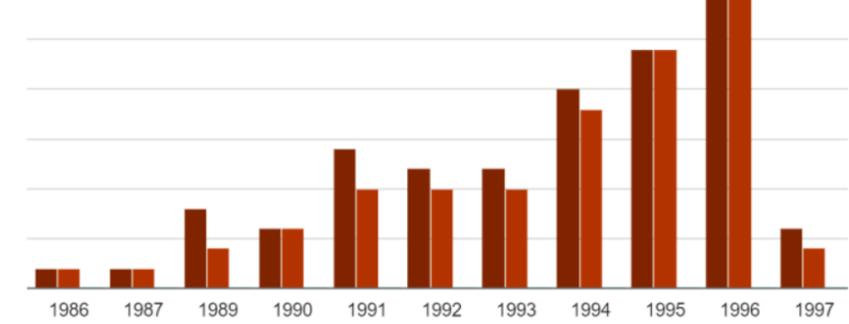


Her Story (Sam Barlow, 2015)

VVV: What we did

- Design patterns research (100+ FMV games using resources from Ludiciné, coded using the HACCS framework)
- VVV Game Jam (with videogame arts organization DMG Toronto)
- Game prototype (*As the End Drew Near*, a VR LARP/narrative game hybrid)
- Synthesized this information into a set of design strategies/design guide

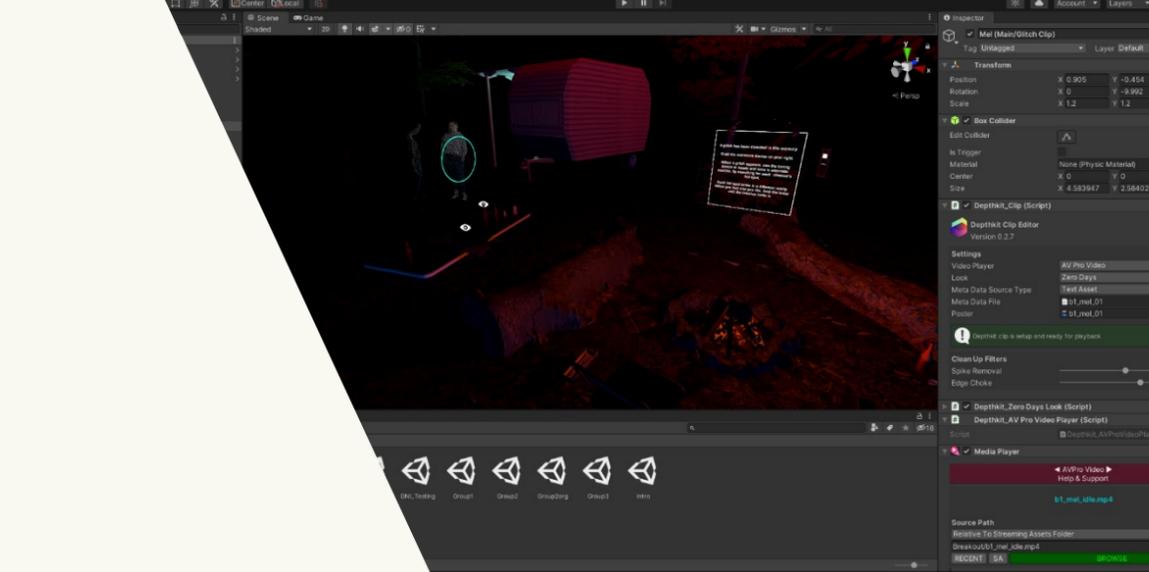
Column chart



Simple search
Extended search



Manipulation interface Mapping Gameworld feedback Mode of performance





Avert your eyes

Staging characters to disguise a lack of eye contact (characters ignoring the player, wearing dark glasses, etc.). Identified as a counter-pattern, as traditional FMV games can offer a fixed viewpoint and thus direct player address (characters that look you in the eye when speaking to you). Provides a design solution to 6DoF encounters with recorded video.

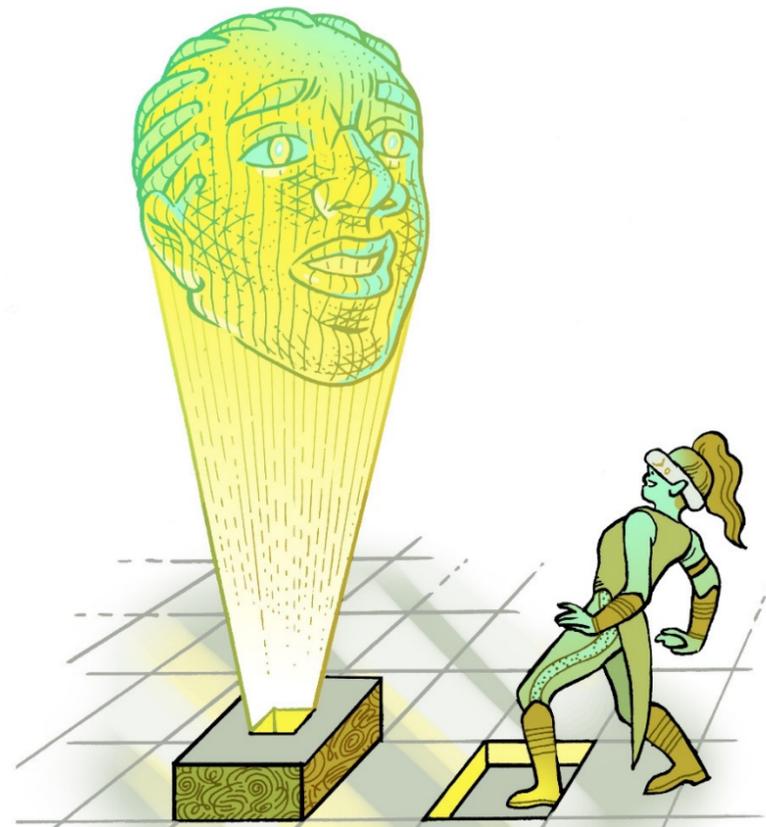
Design guide illustrations by Kat Verhoeven



As seen in: *Afterworld: The Age of Tomorrow* (Dimension Studio, 2021)



How we applied it: temporally displacing the player



Mediate it

Framing volumetric video *as media* in the game world (e.g. some sort of recording, or something like a recording (e.g. a memory, a ghost)). Allows designers to set player expectations for how they might interact with the volumetric video.

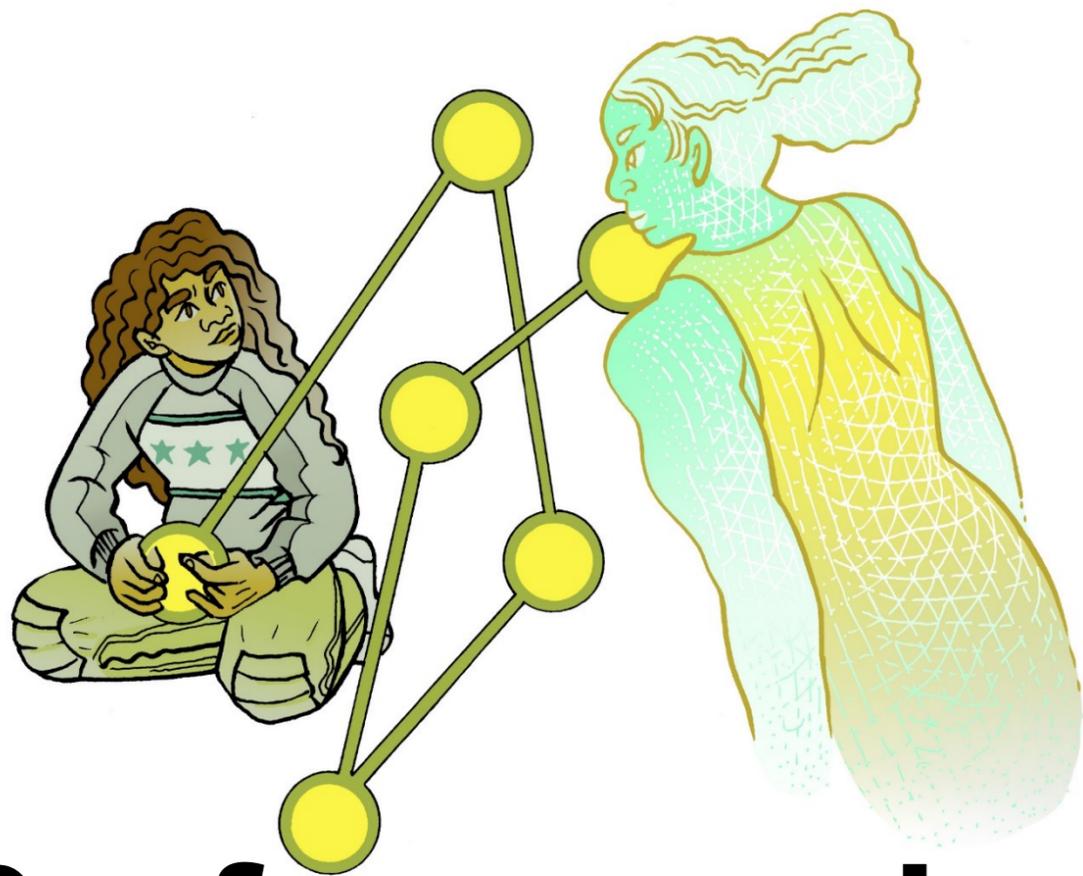
Design guide illustrations by Kat Verhoeven



As seen in: *Night Trap* (Digital Pictures, 1992)



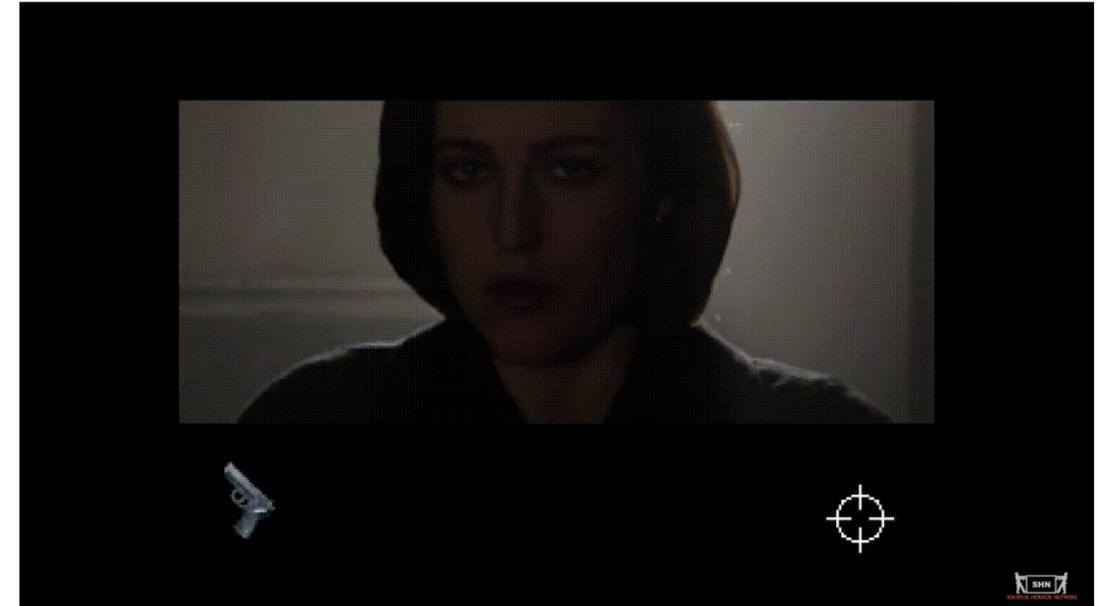
How we applied it: characters as memory



Perform and activate

Players are asked to perform an action (either a simple or complex action) through an interface, to trigger the next video sequence. The player action and the game action occur sequentially. Provides a means of adding more dynamic action to a static video sequence.

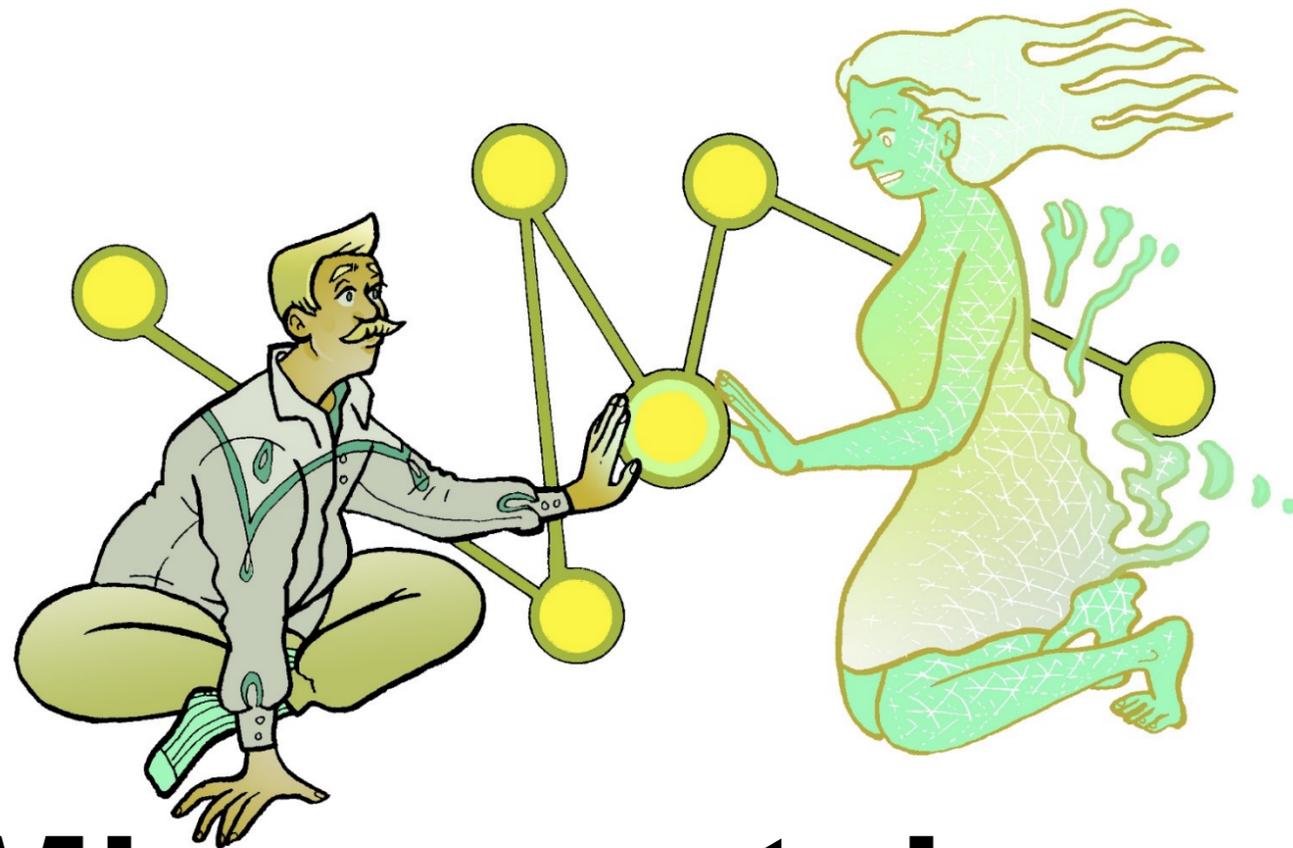
Design guide illustrations by Kat Verhoeven



As seen in: *X-Files: The Game* (Fox Interactive, 1999)



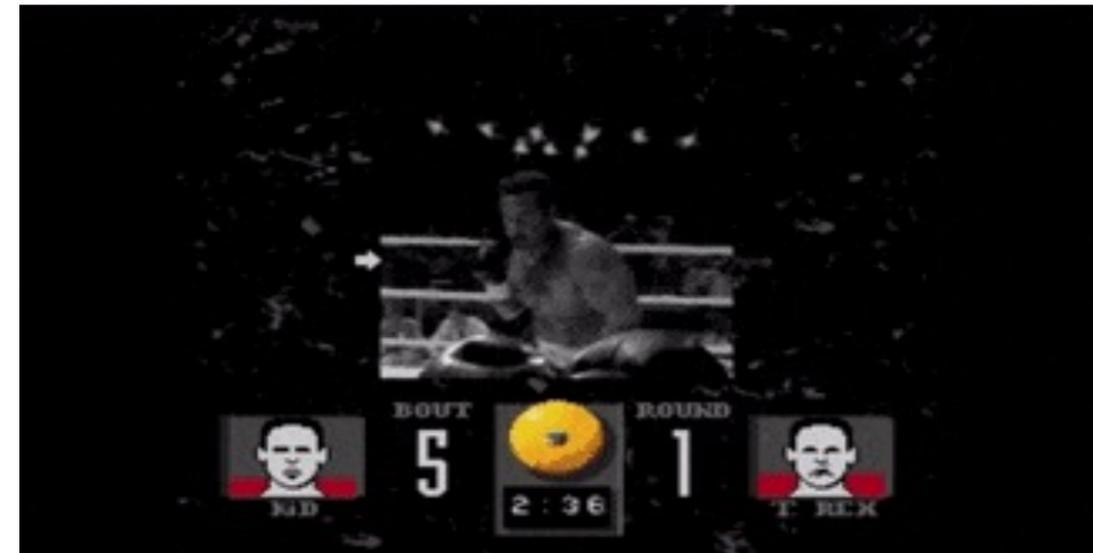
How we applied it: stabilizing memories with the tuner



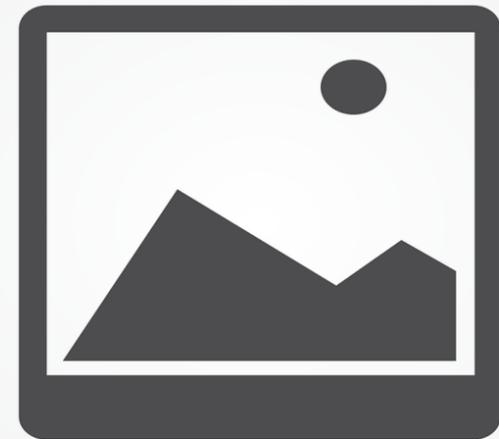
Mirror match

Players are asked to synchronize their actions to the video (either by performing the same action, or responding to an action), through an interface. The player action and the game action occur simultaneously. Provides a means of integrating dynamic action into a static sequence in real time.

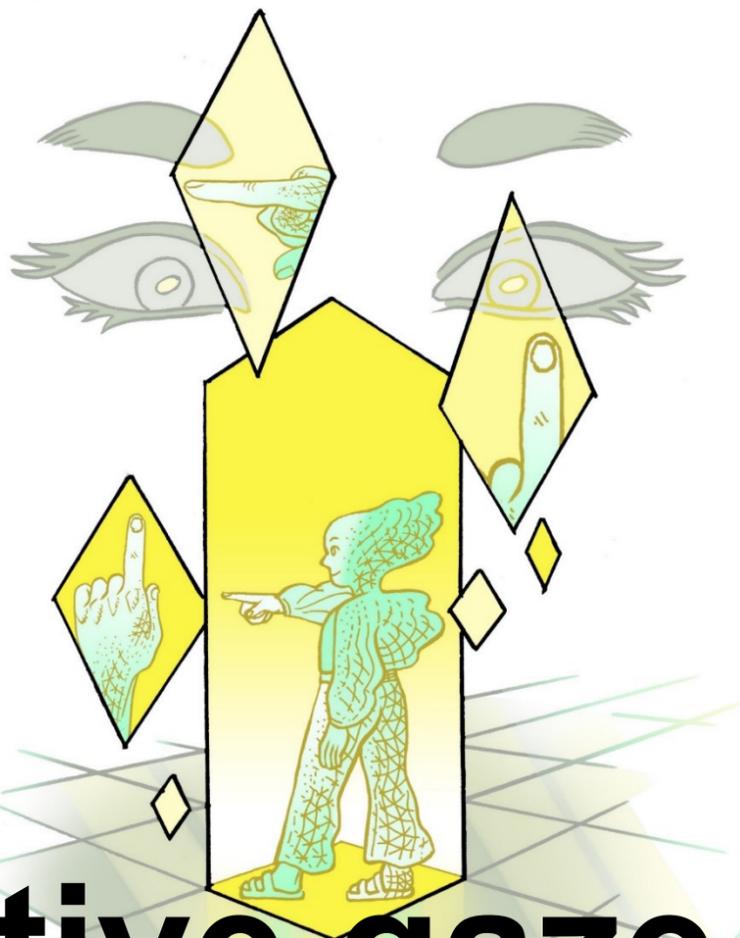
Design guide illustrations by Kat Verhoeven



As seen in: *Prize Fighter* (Digital Pictures, 1993)



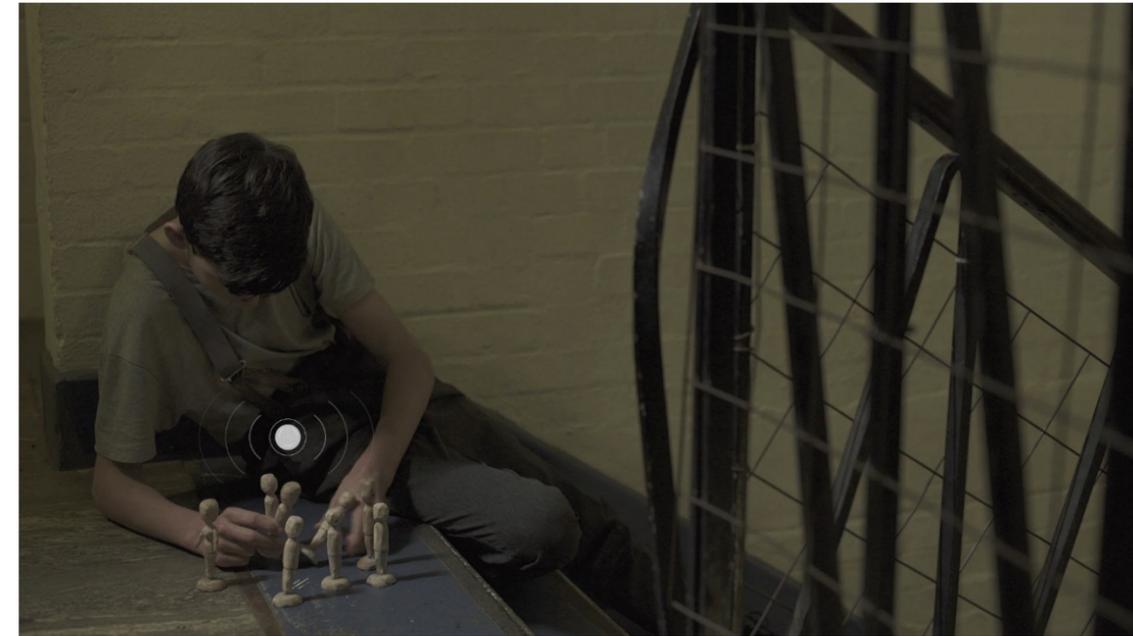
How we applied it: N/A



Active gaze

Triggering video sequences through “looking.”
Instrumentalizes looking/examining as a game mechanic, either symbolically (through an eye icon) or more literally, keeping in mind instrumentalized looking is typically an active mechanic.

Design guide illustrations by Kat Verhoeven



As seen in: *The Bunker* (Splendy Games, 2016)



How we applied it: gaze triggers

Beyond the guide: take-aways

- Relevant design solutions primarily solved for *static* or *indirect dynamic* gameplay; and/or managing *media size*
- Do not presume “real” is just a tech problem: more visual fidelity not equal to more presence/immersion
- Desperate need for *accessible tools* and *creator-centric processes* (access challenges are significant and getting worse)
- There is game design knowledge buried in undervalued genres

Connect

Cindy Poremba, PhD
OCAD University game:play Lab
cporemba@ocadu.ca

Thank you.

Find the VVV Design Guide (launch Spring 2022) at <https://www.volumetricvideogames.ca/>

Follow VVV on Instagram at <https://www.instagram.com/volumetricvideovideogames/>

Find an alpha demo for *As the End Drew Near* on itch.io <https://cloobot.itch.io/as-the-end-drew-near>

Find the game:play Lab at <https://gameplaylab.ca>

Find Ludov at <https://www.ludov.ca/en/>

Game creators to watch: Roya DelSol, Maxwell Lander, Max Ellinger

VVV was supported in part by funding from the Social Sciences and Humanities Research Council of Canada.

SSHRC  CRSH

Social Sciences and Humanities Research Council of Canada
Conseil de recherches en sciences humaines du Canada