
TECH 421 - Future of Digital Media
TECH 3706 - AR/VR in Architectural Environments


One Class
New Class
Be Ready for Changes

Most Up-to-date Syllabus:

https://github.com/ivaylopg/Tech421Tech3706

Contact Me

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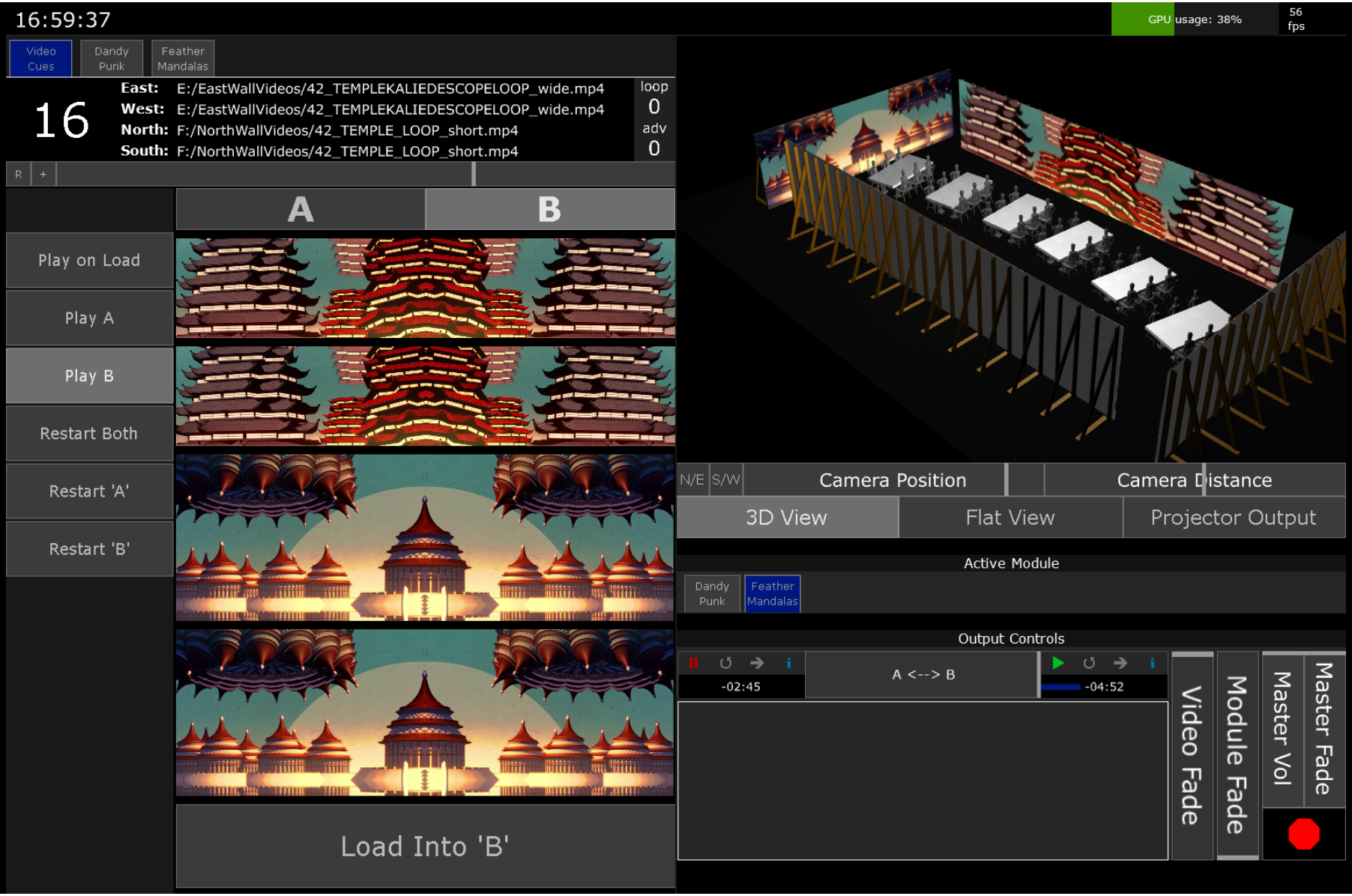
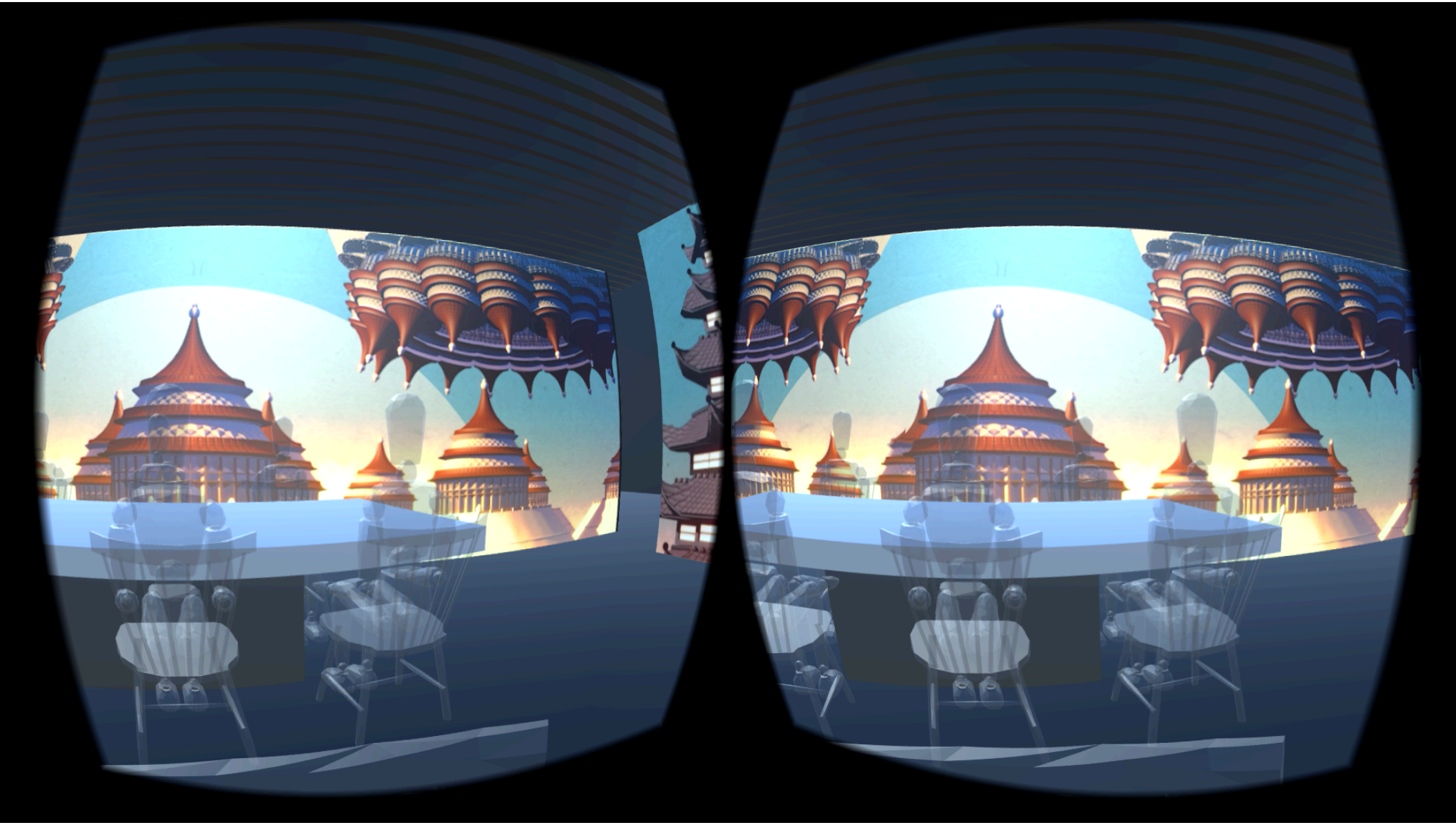
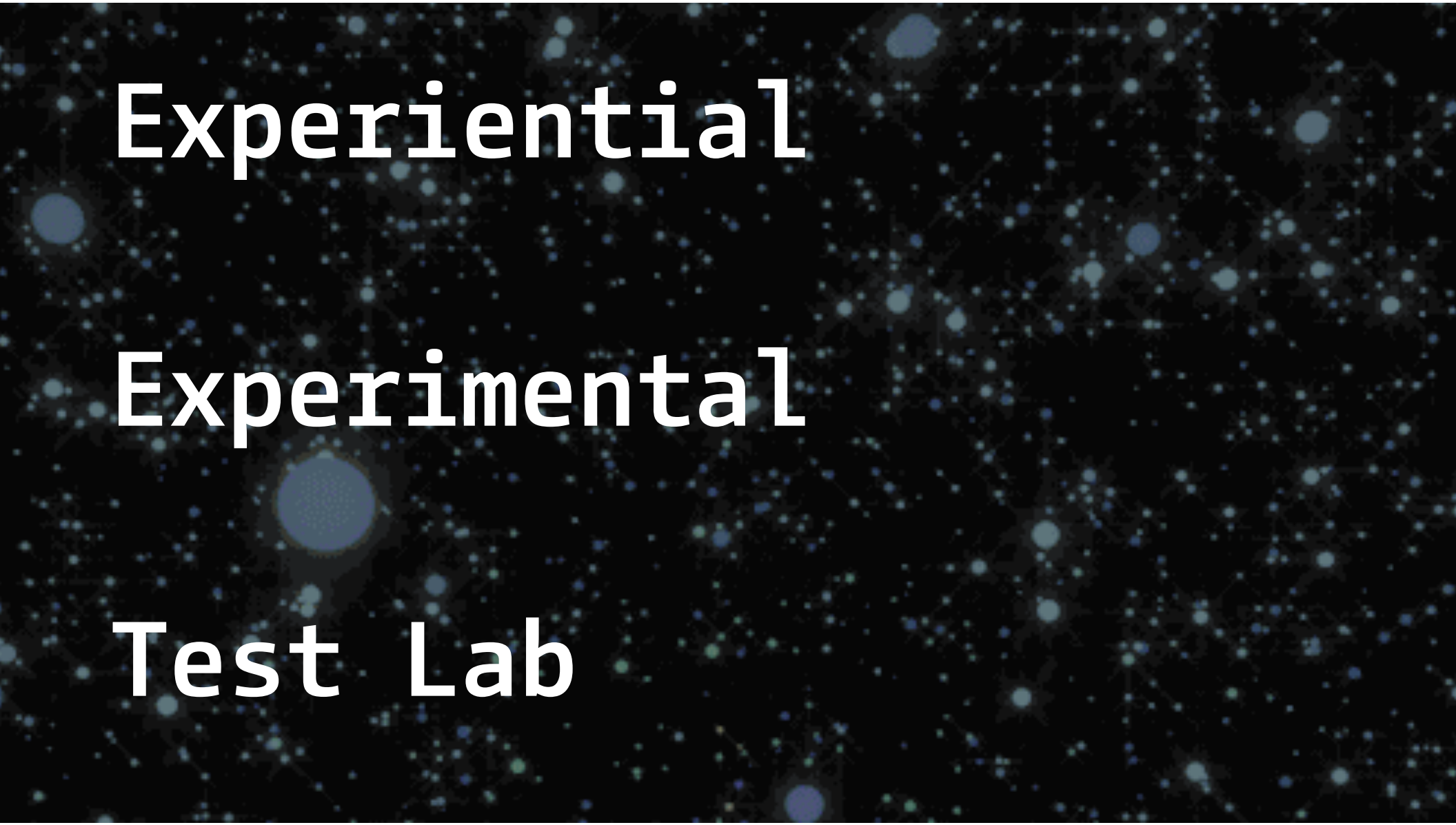
About me


luxloop
An Experience-design and Production Studio

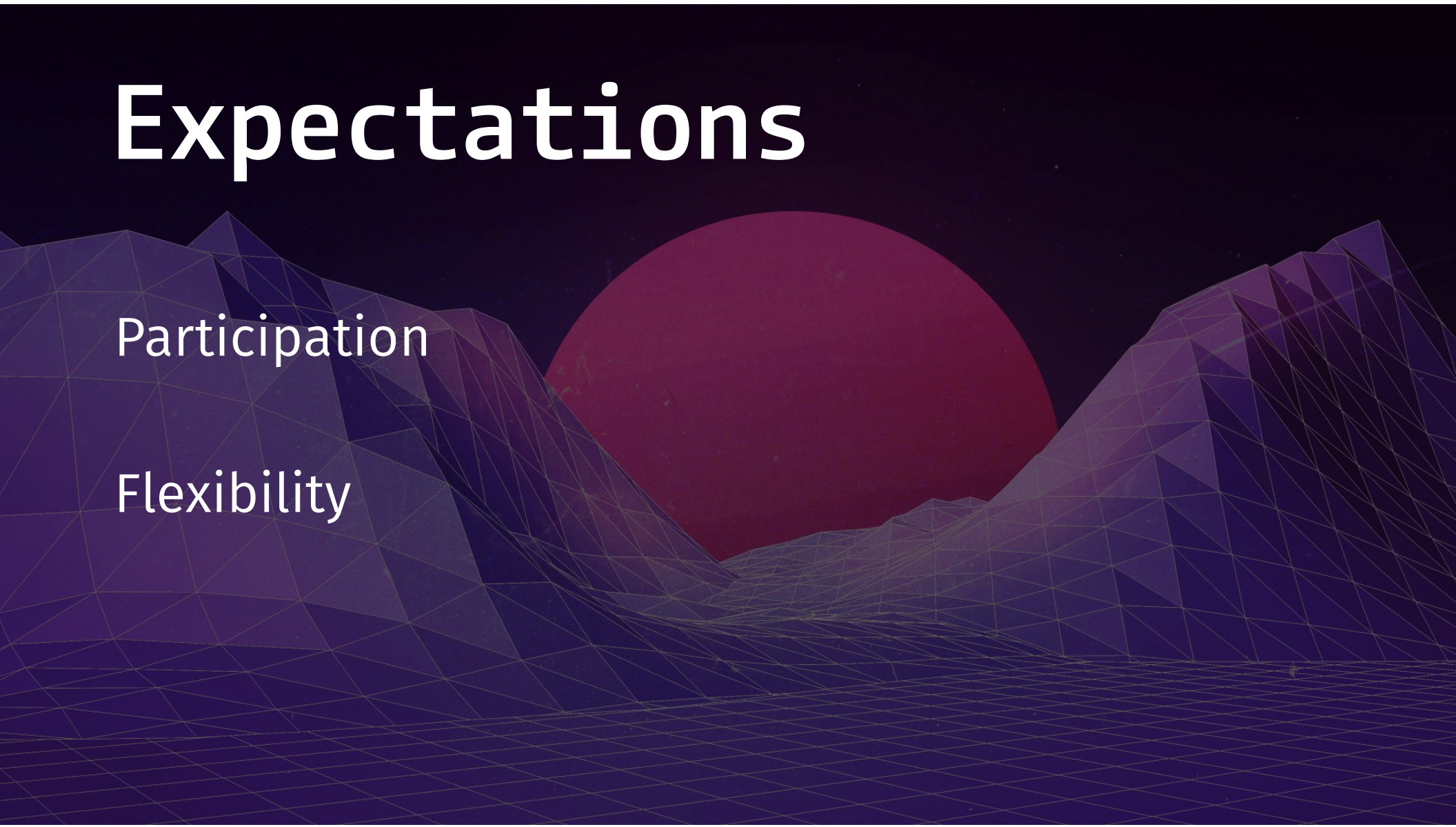

16:59:37
GPU usage: 38%
56 fps
Video Cues
Dandy Punk
Feather Mandalas
East: E:/EastWallVideos/42_TEMPLEKALIEDESCOPELOOP_wide.mp4
West: E:/EastWallVideos/42_TEMPLEKALIEDESCOPELOOP_wide.mp4
North: F:/NorthWallVideos/42_TEMPLE_LOOP_short.mp4
South: F:/NorthWallVideos/42_TEMPLE_LOOP_short.mp4
loop 0
adv 0
R
+
A
B
Play on Load
Play A
Play B
Restart Both
Restart 'A'
Restart 'B'
Load Into 'B'
N/E
S/W
Camera Position
Camera Distance
3D View
Flat View
Projector Output
Active Module
Dandy Punk
Feather Mandalas
Output Controls
-02:45
A <--> B
-04:52
Video Fade
Module Fade
Master Vol
Master Fade



About YOU?


Experiential
Experimental
Test Lab

Expectations



Participation

Flexibility


Assignments + Format
Keep up with reading
“mini” project
Midterm project
Final project

Goals

Specific Skills

- Completed multiple VR/AR Projects
- HTC Vive, Hololens
- Unity

Conceptual Proficiency

- New paradigms of design
- A new set of tools available to you

Let’s Go!


htc

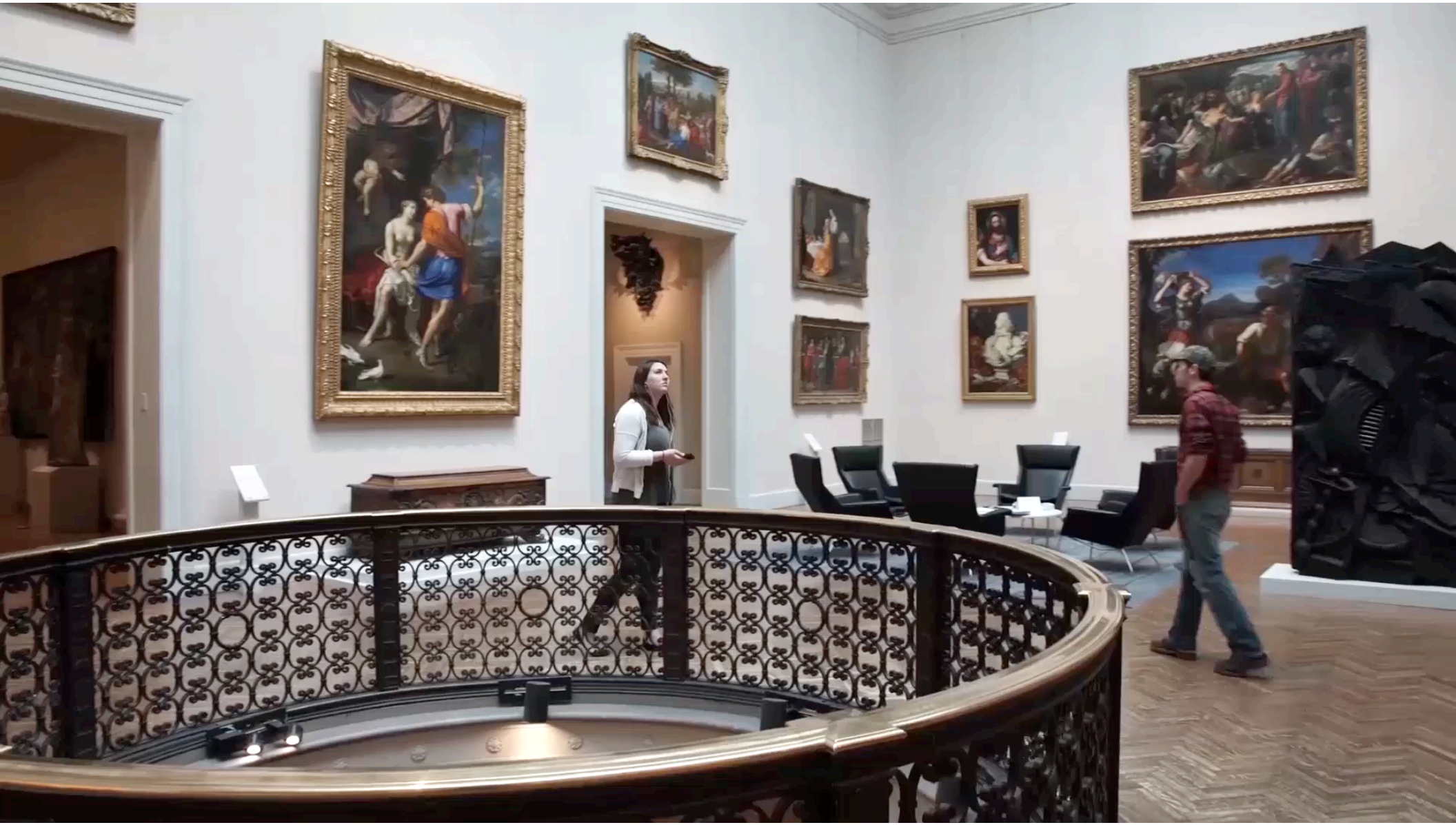
What is AR/VR/MR?

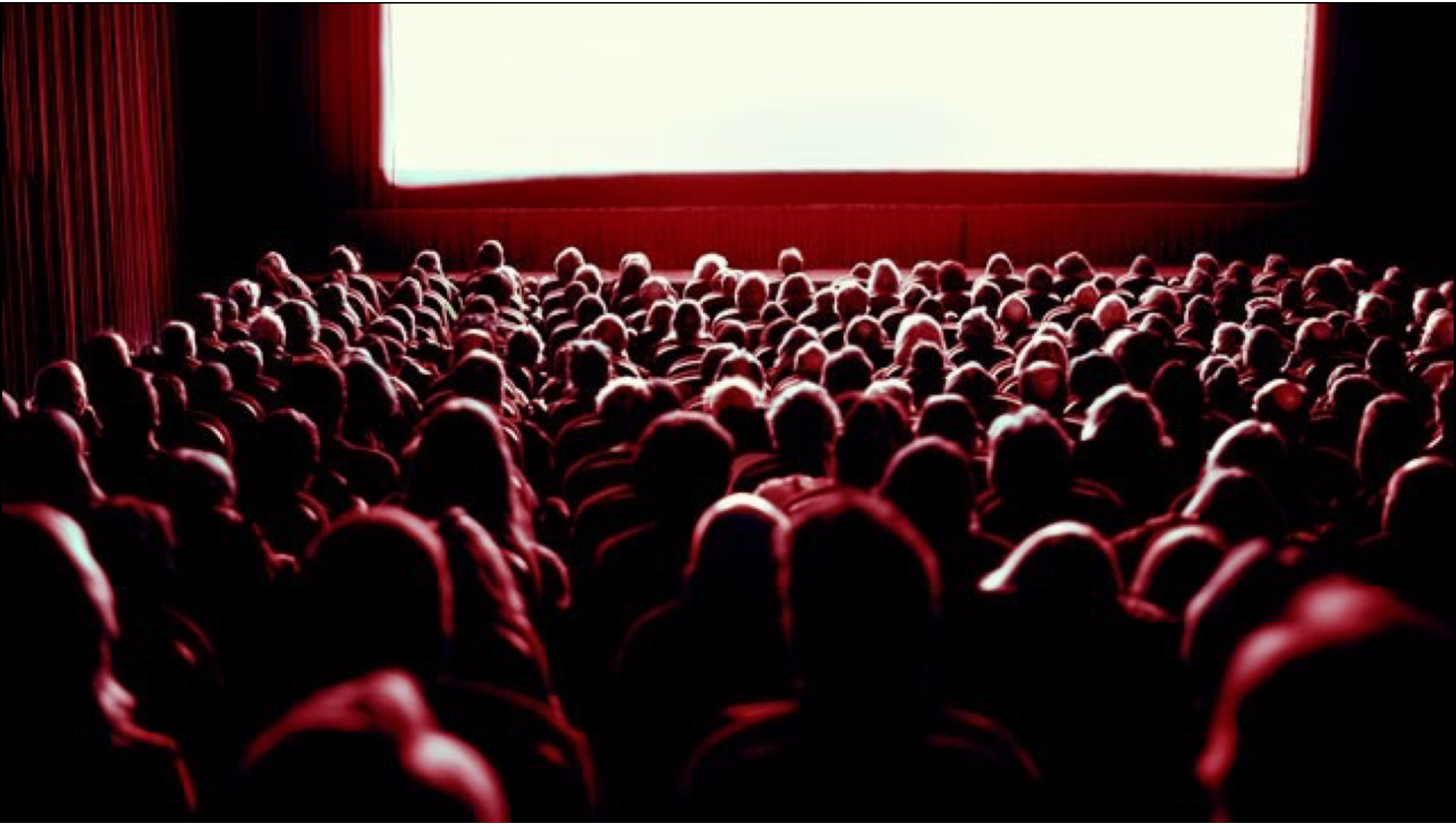
Inducing targeted behavior in an organism by using artificial sensory stimulation, while the organism has little or no awareness of the interference.

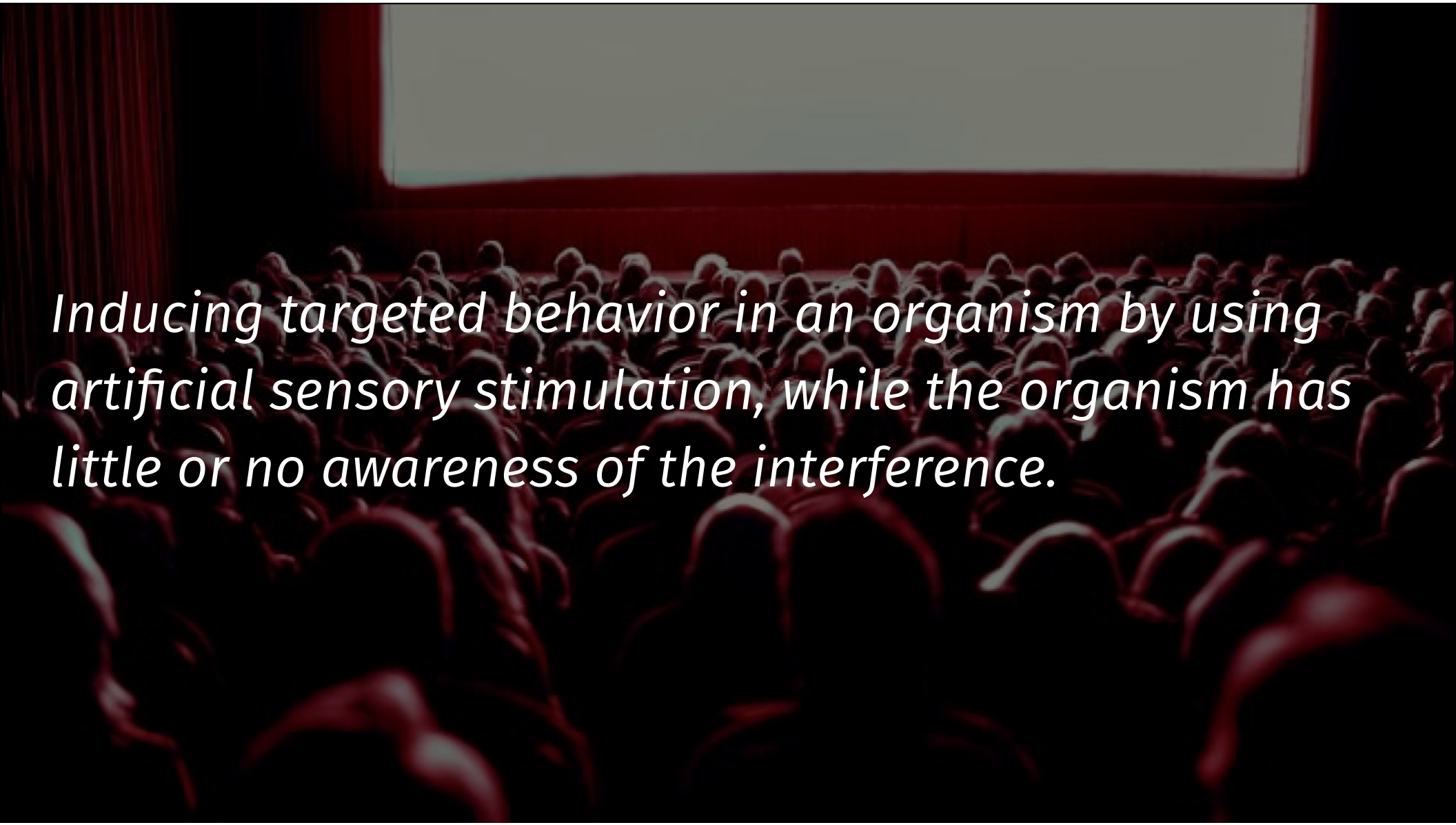

Do not attempt.


Pokémon
GO
TM
AR
Pikachu
CP 62


overheard
you are following:
Parents
Kids

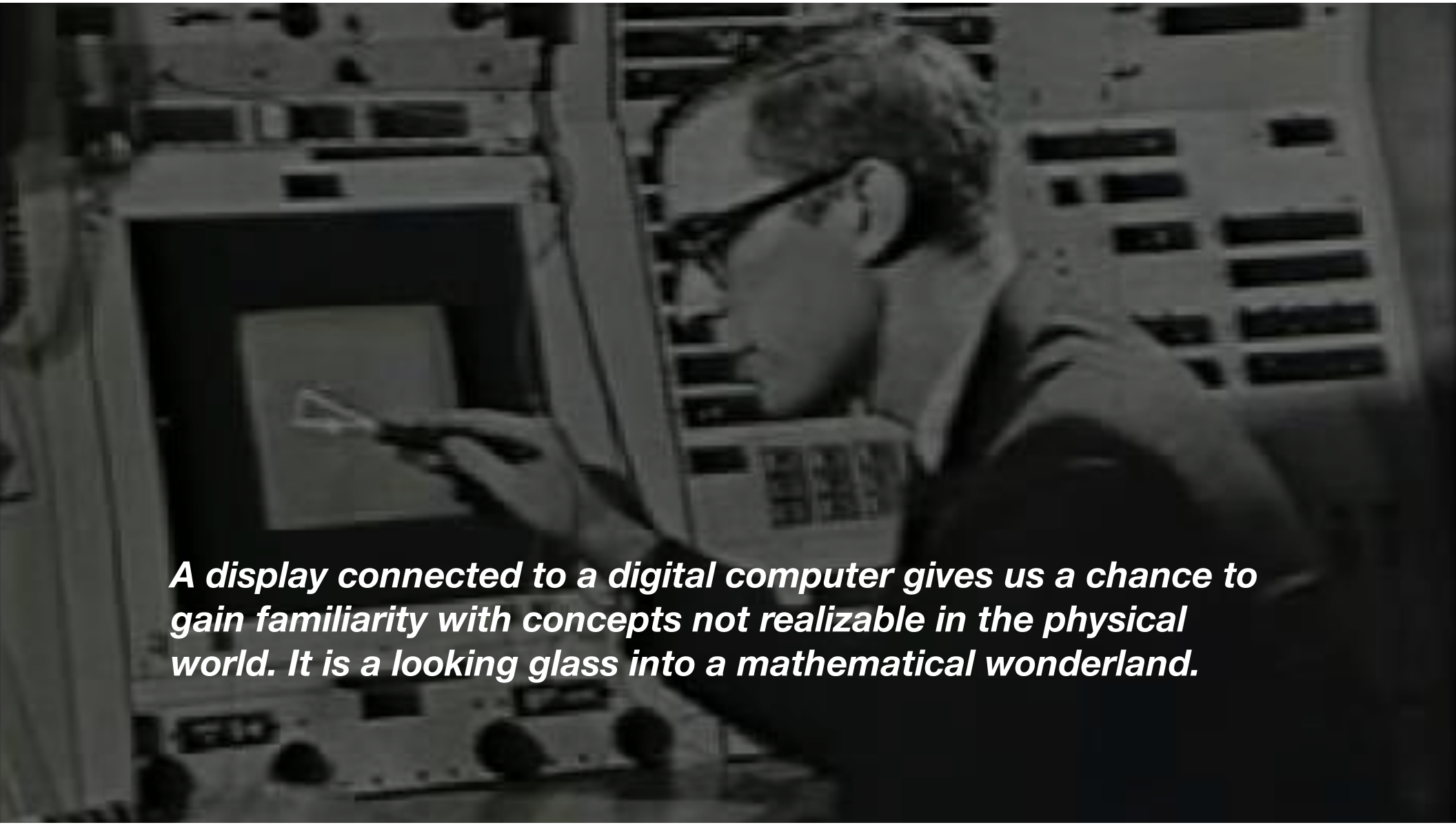


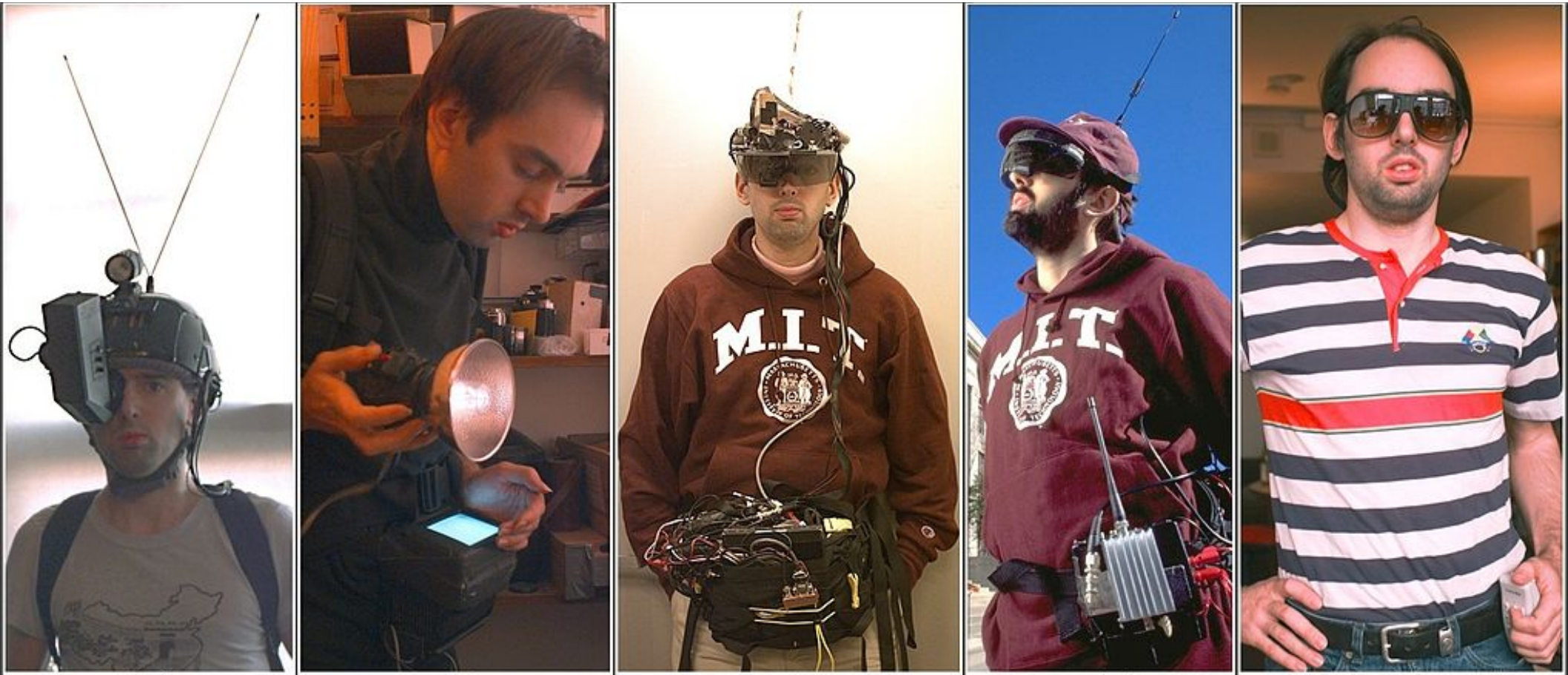



Inducing targeted behavior in an organism by using artificial sensory stimulation, while the organism has little or no awareness of the interference.

A (Brief) History of VR/AR

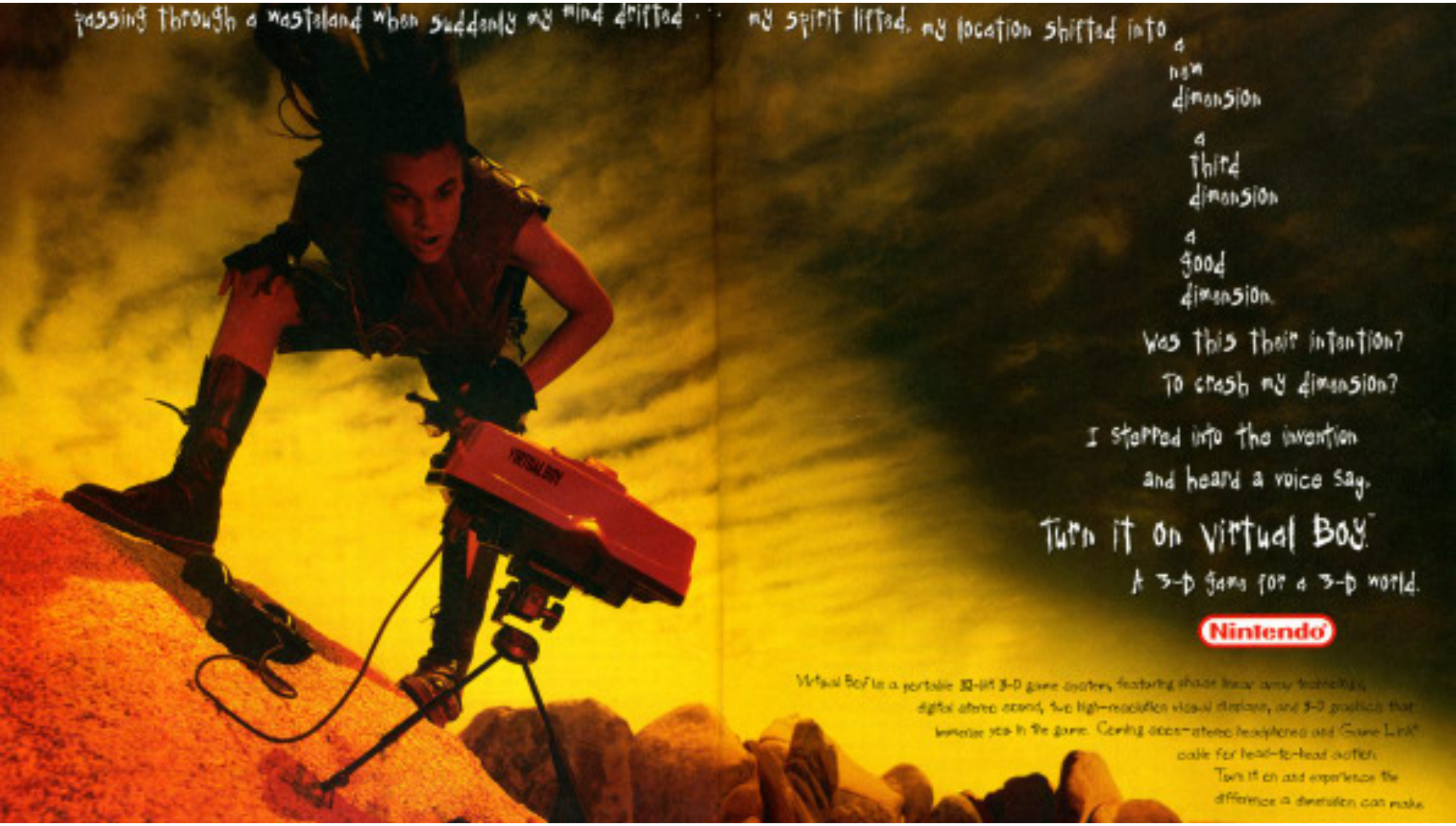
Philco HMD

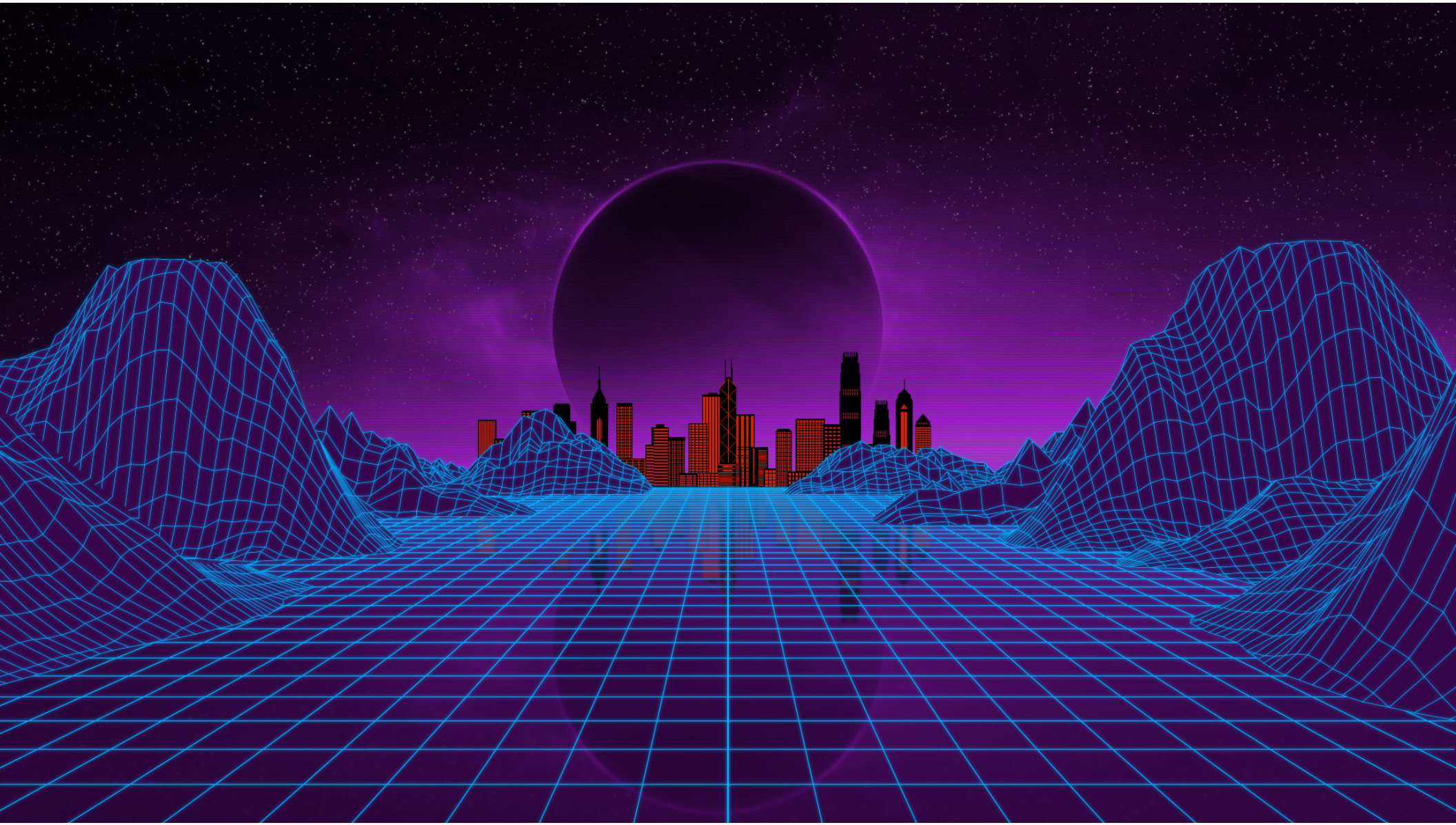

A display connected to a digital computer gives us a chance to gain familiarity with concepts not realizable in the physical world. It is a looking glass into a mathematical wonderland.

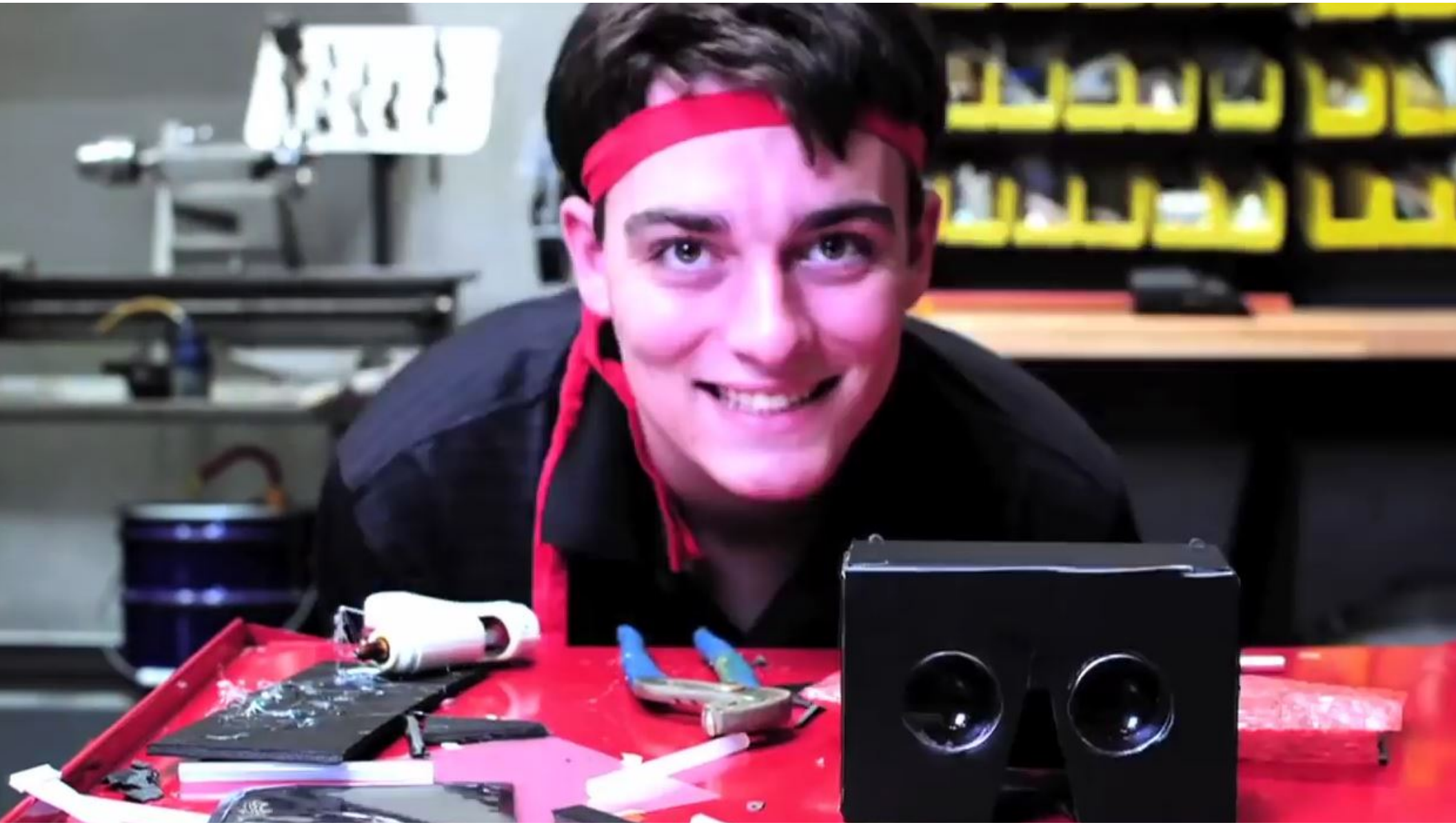


(a) 1980 | (b) Mid 1980s | (c) Early 1990s | (d) Mid 1990s | (e) Late 1990s


SHIELD
LEVEL 2
ENEMY
SCORE 5000


passing through a wasteland when suddenly my mind drifted . . .
my spirit lifted. my location shifted into
a
new
dimension
a
third
dimension
a
good
dimension.
Was this their intention?
To crash my dimension?
I stepped into the invention
and heard a voice say.
Turn it on Virtual Boy.
A 3-D game for a 3-D world.
Nintendo
Virtual Boy is a portable 32-bit 3-D game system, featuring shade linear array technology,
digital stereo sound, two high-resolution visual displays, and 3-D graphics that
immerse you in the game. Comfy stereo headphones and Game Link
cable for head-to-head action.
Turn it on and experience the
difference a dimension can make.

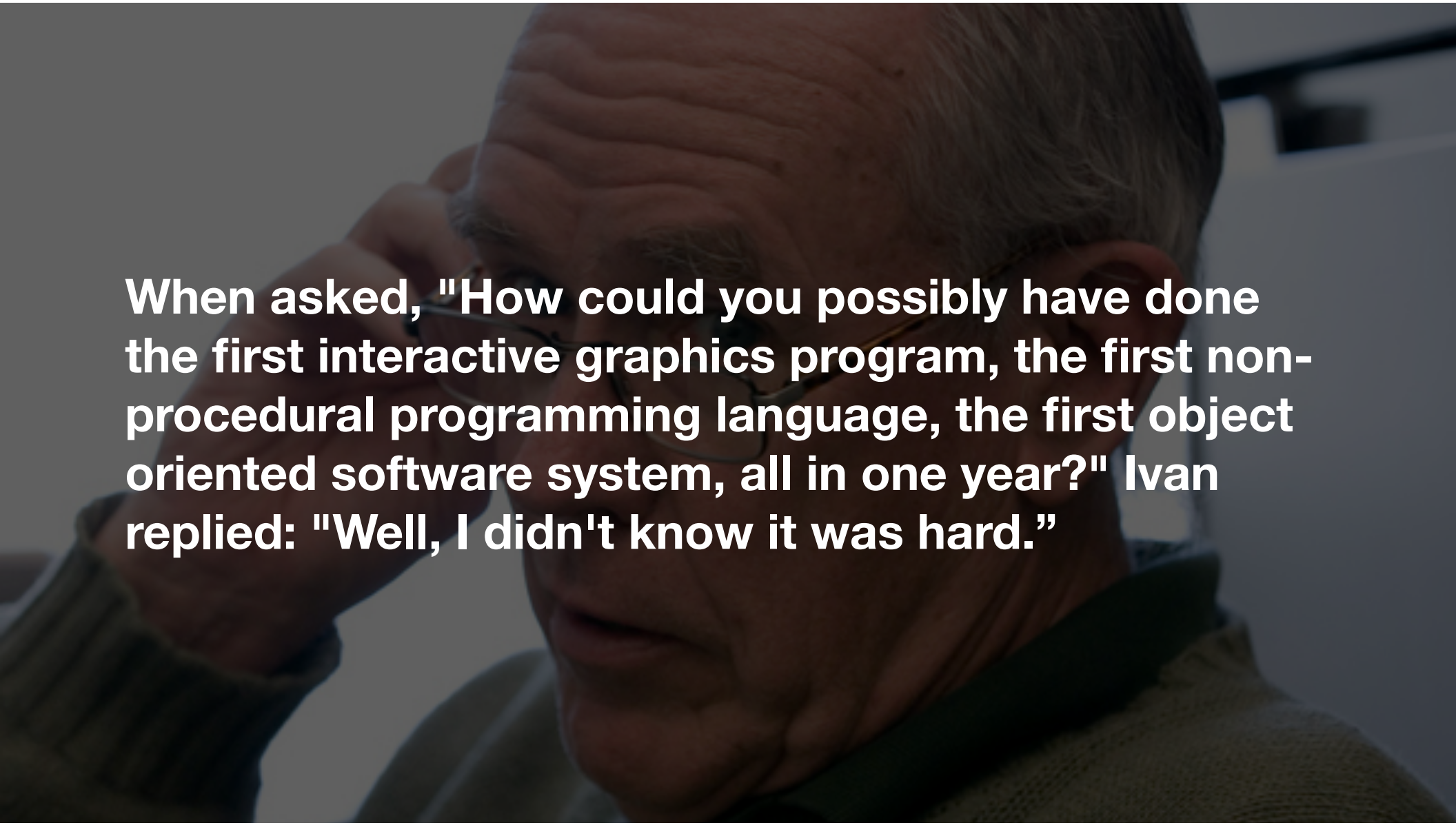




AUGUST 17, 2015

TIME

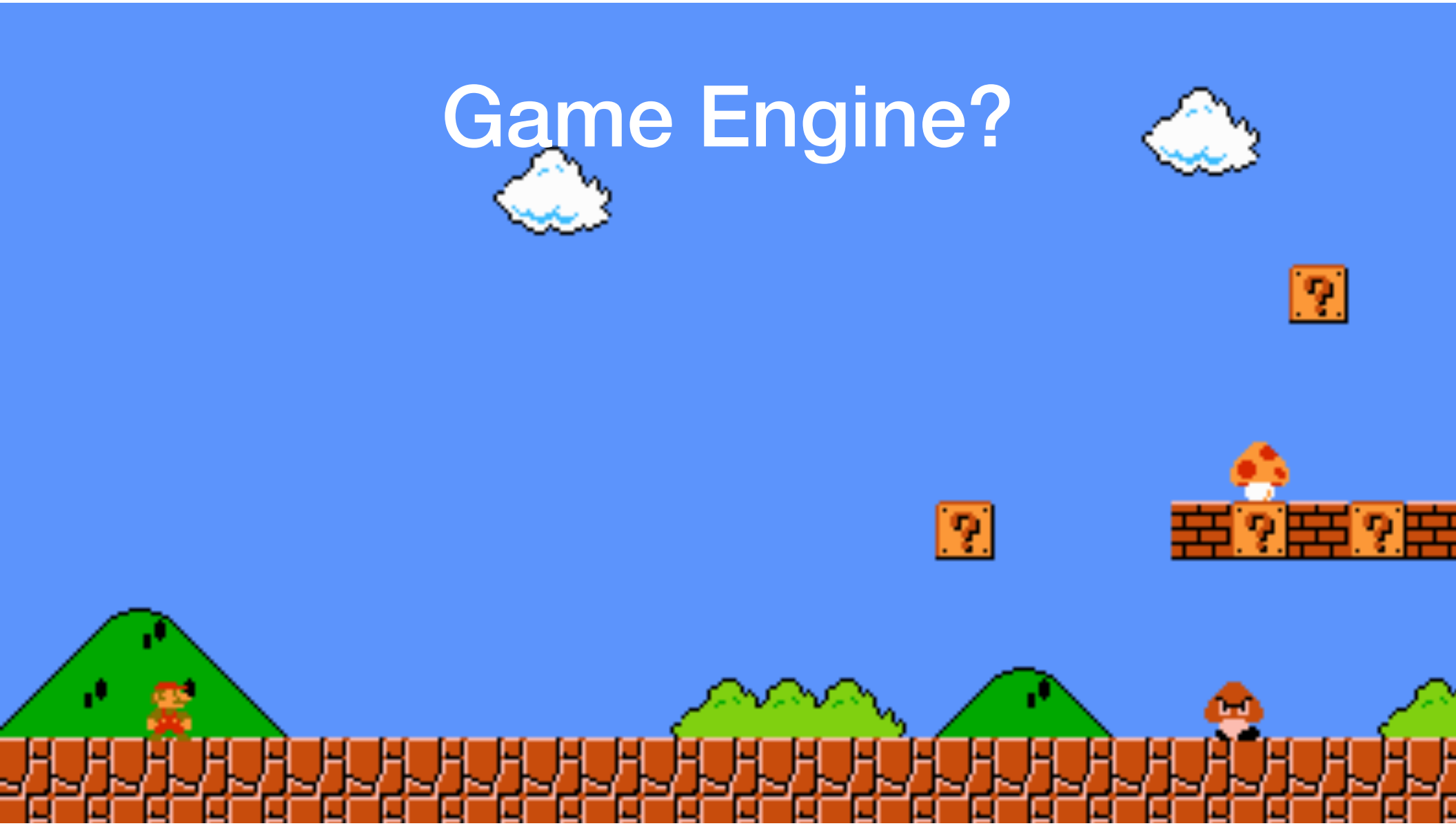
The Surprising Joy of Virtual Reality

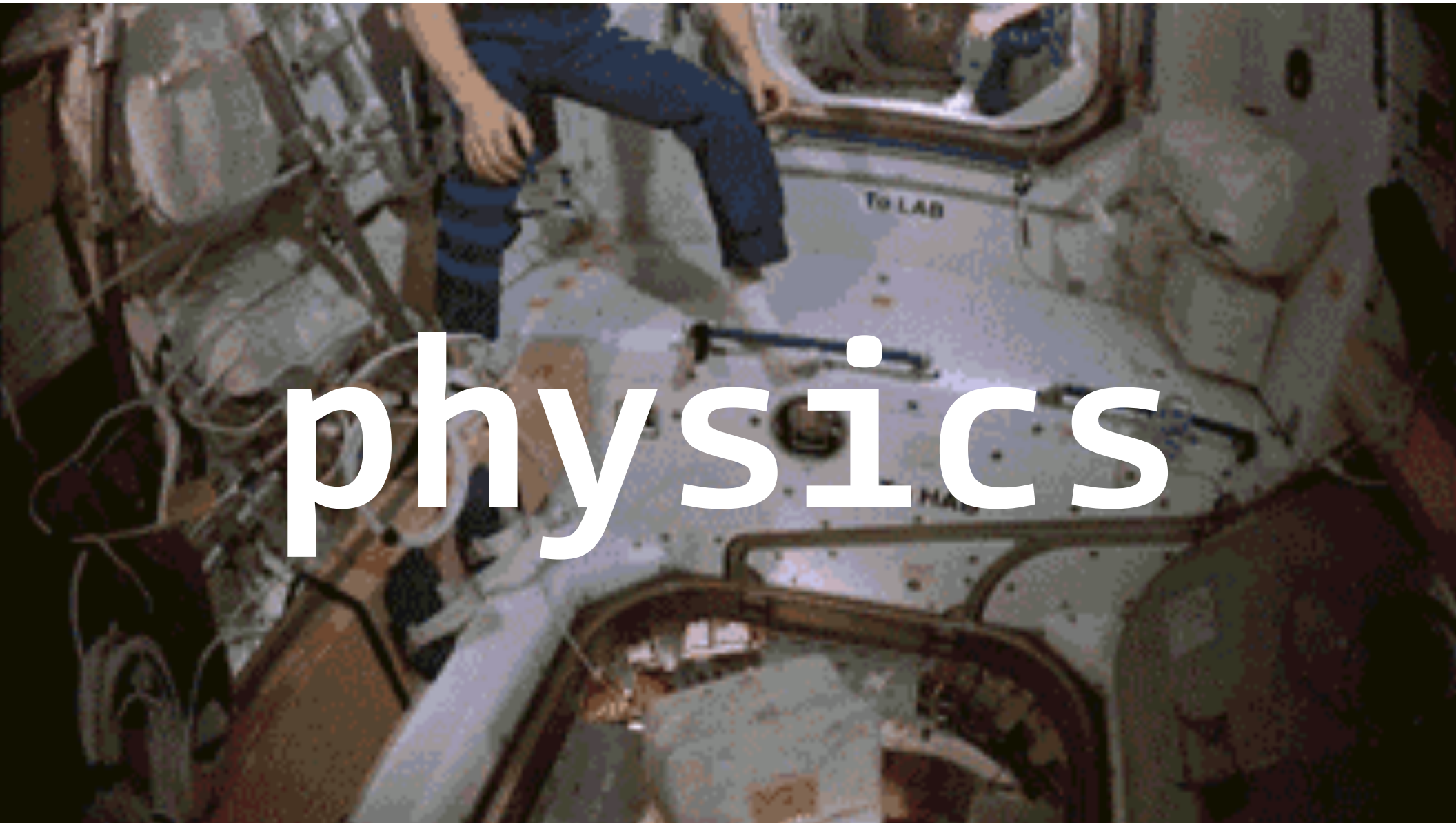

When asked, "How could you possibly have done the first interactive graphics program, the first non-procedural programming language, the first object oriented software system, all in one year?" Ivan replied: "Well, I didn't know it was hard.”


unity

abstraction

Game Engine?

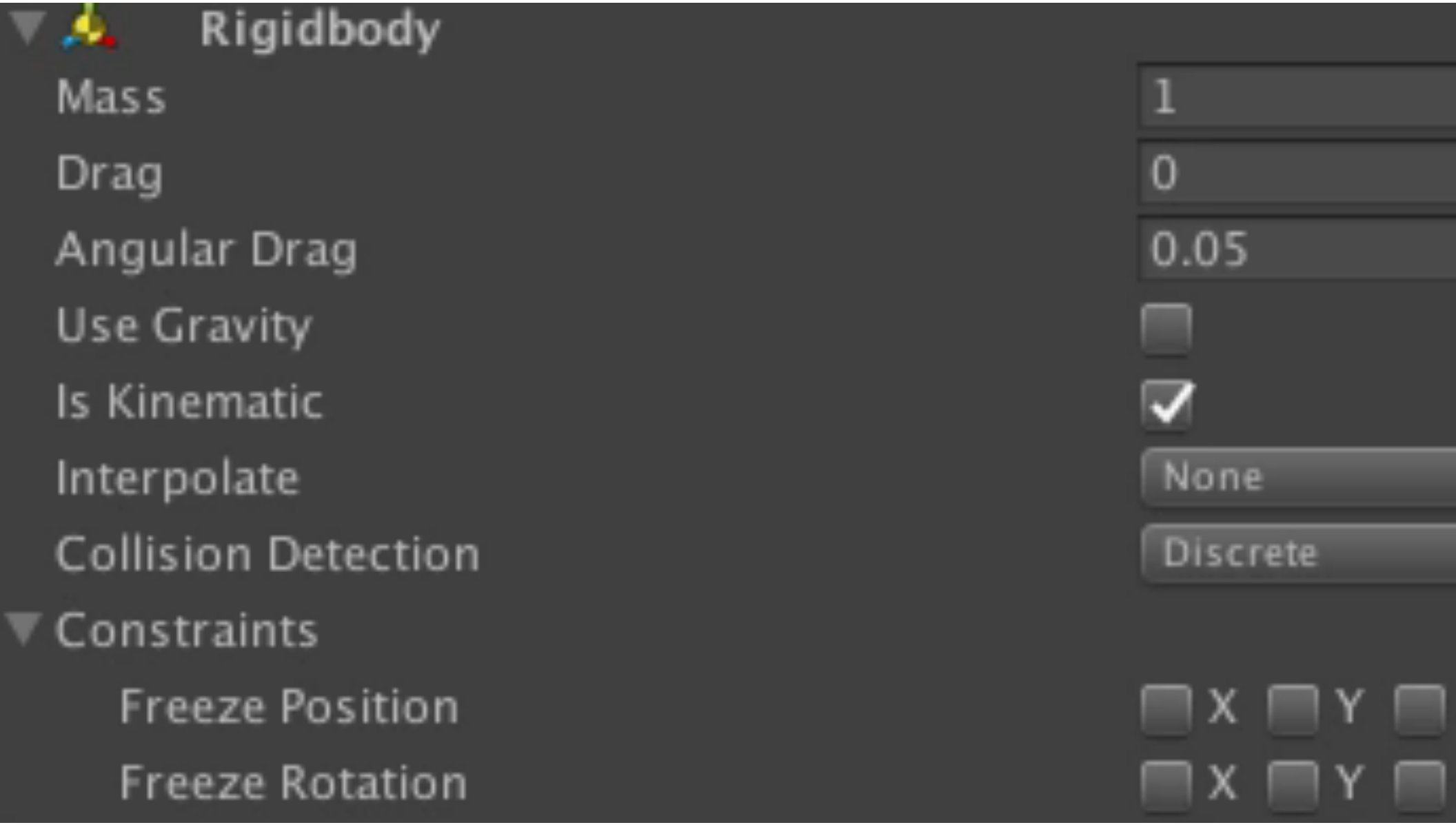




physics

```
PVector position = new PVector(0,0);
PVector velocity = new PVector(0,0);
PVector gravity  = new PVector(0, 9.8);


void draw() {
  velocity.add(gravity);
  position.add(velocity);
  drawObject(position.x,position.y);
}
```

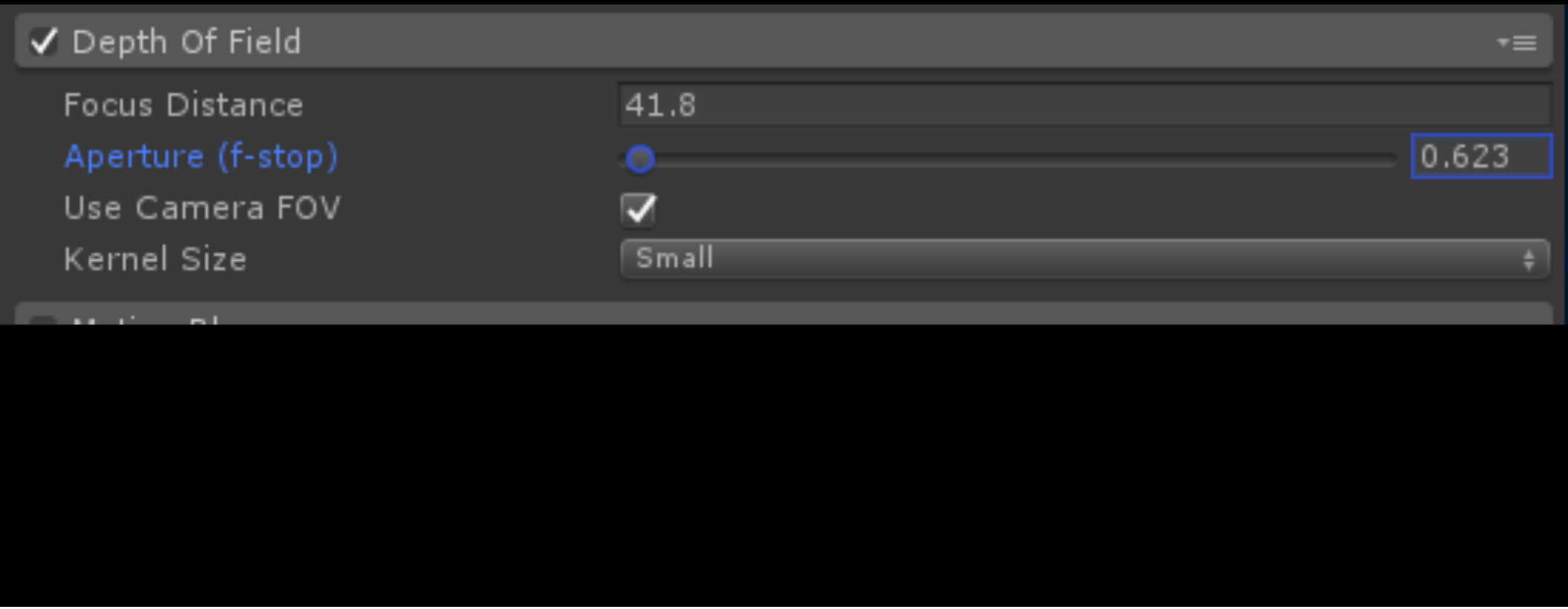

Rigidbody
Mass
1
Drag
0
Angular Drag
0.05
Use Gravity
Is Kinematic
Interpolate
None
Collision Detection
Discrete
Constraints
Freeze Position
X
Y
Freeze Rotation
X
Y

```
int n = 10;
float aperture = 0.05;
glm::mat4 projection = glm::perspective(...);

glm::vec3 right = glm::normalize(glm::cross(object - eye, up));
glm::vec3 p_up = glm::normalize(glm::cross(object - eye, right));

for(int i = 0; i < n; i++) {
  glm::vec3 bokeh = right * cosf(i * 2 * M_PI / n) + p_up * sinf(i * 2 * M_PI / n);
  glm::mat4 modelview = glm::lookAt(eye + aperture * bokeh, object, p_up);
  glm::mat4 mvp = projection * modelview;
  glUniformMatrix4fv(uniform_mvp, 1, GL_FALSE, glm::value_ptr(mvp));
  draw_scene();
  glAccum(i ? GL_ACCUM : GL_LOAD, 1.0 / n);
}

glAccum(GL_RETURN, 1);
glSwapBuffers();
```


Depth Of Field
Focus Distance
41.8
Aperture (f-stop)
0.623
Use Camera FOV
Kernel Size
Small

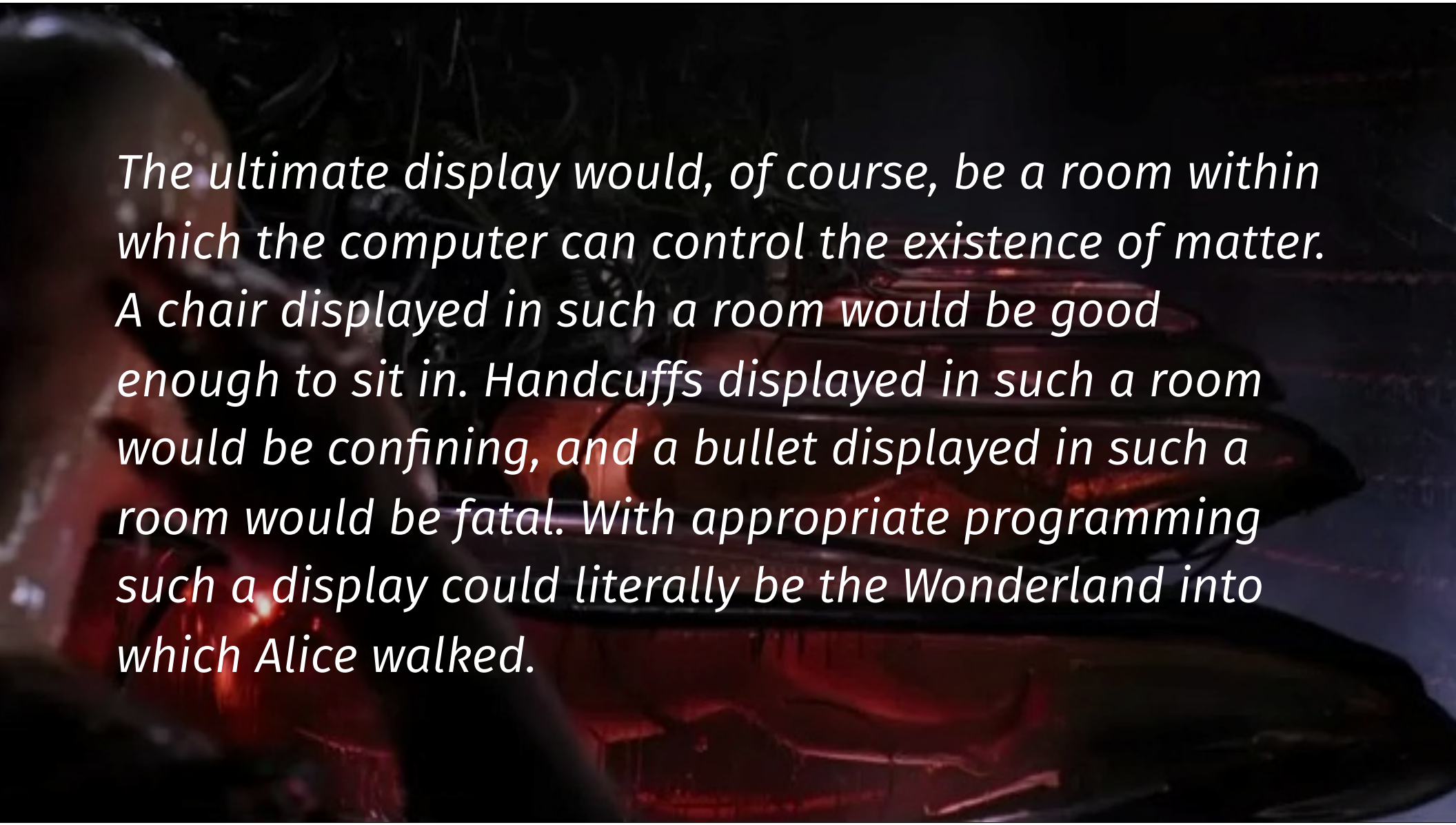
designing for the real world


unity

Virtual Reality (LaValle) - Chapter 1

http://vr.cs.uiuc.edu/

Set up Unity!


The ultimate display would, of course, be a room within which the computer can control the existence of matter. A chair displayed in such a room would be good enough to sit in. Handcuffs displayed in such a room would be confining, and a bullet displayed in such a room would be fatal. With appropriate programming such a display could literally be the Wonderland into which Alice walked.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