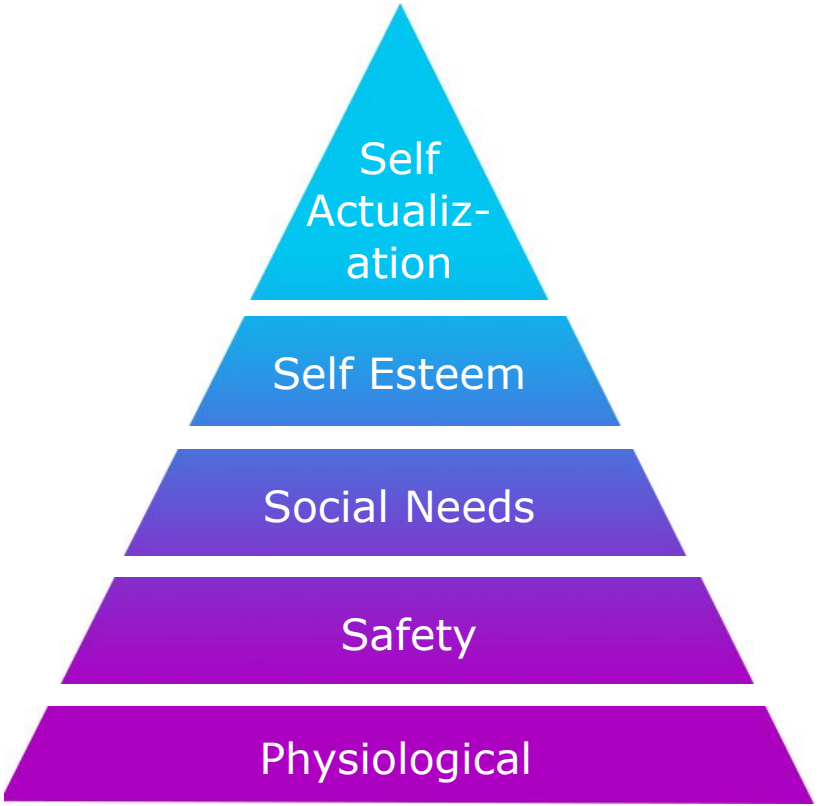
VRDC

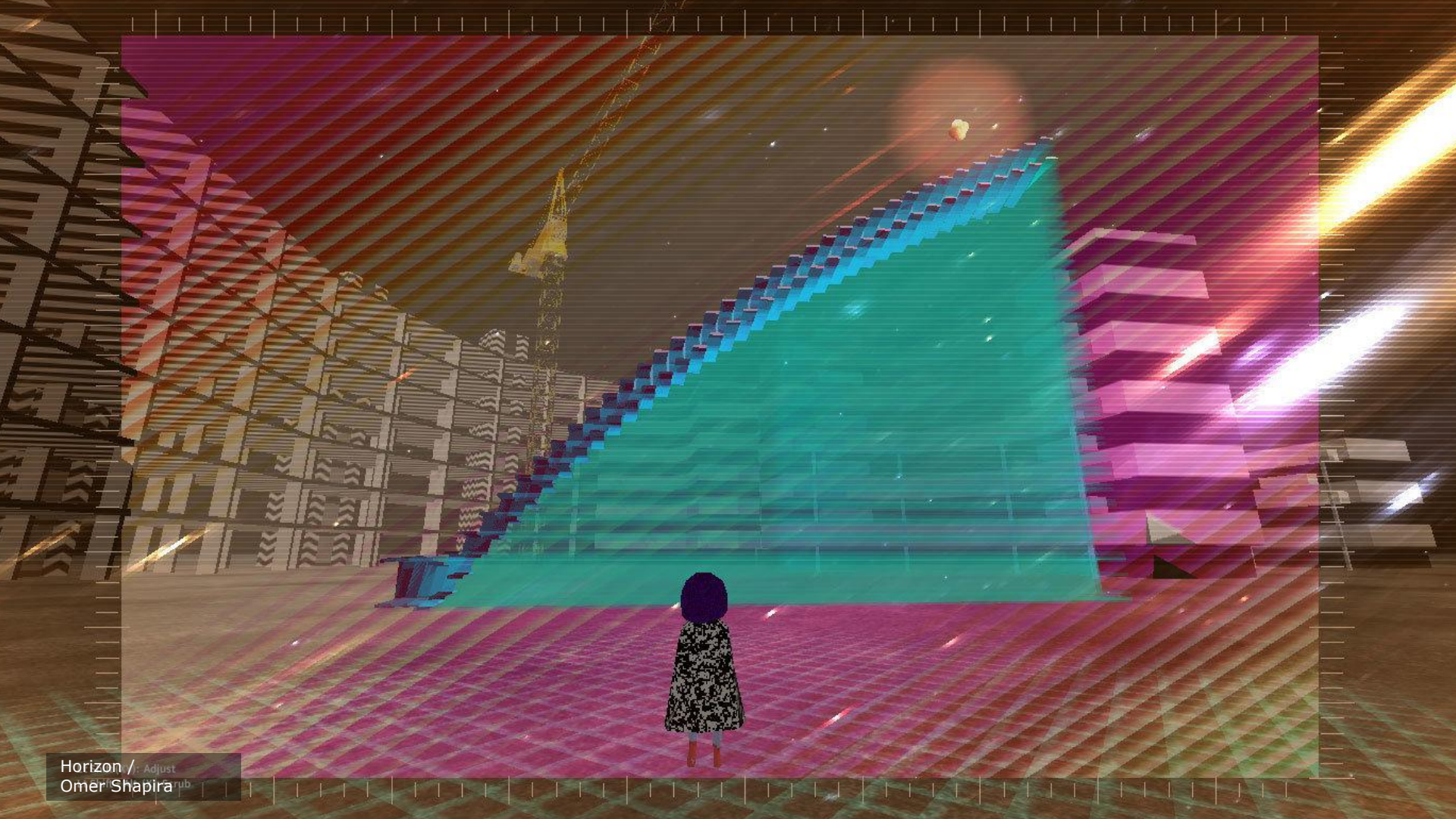
Thinking With Your Body

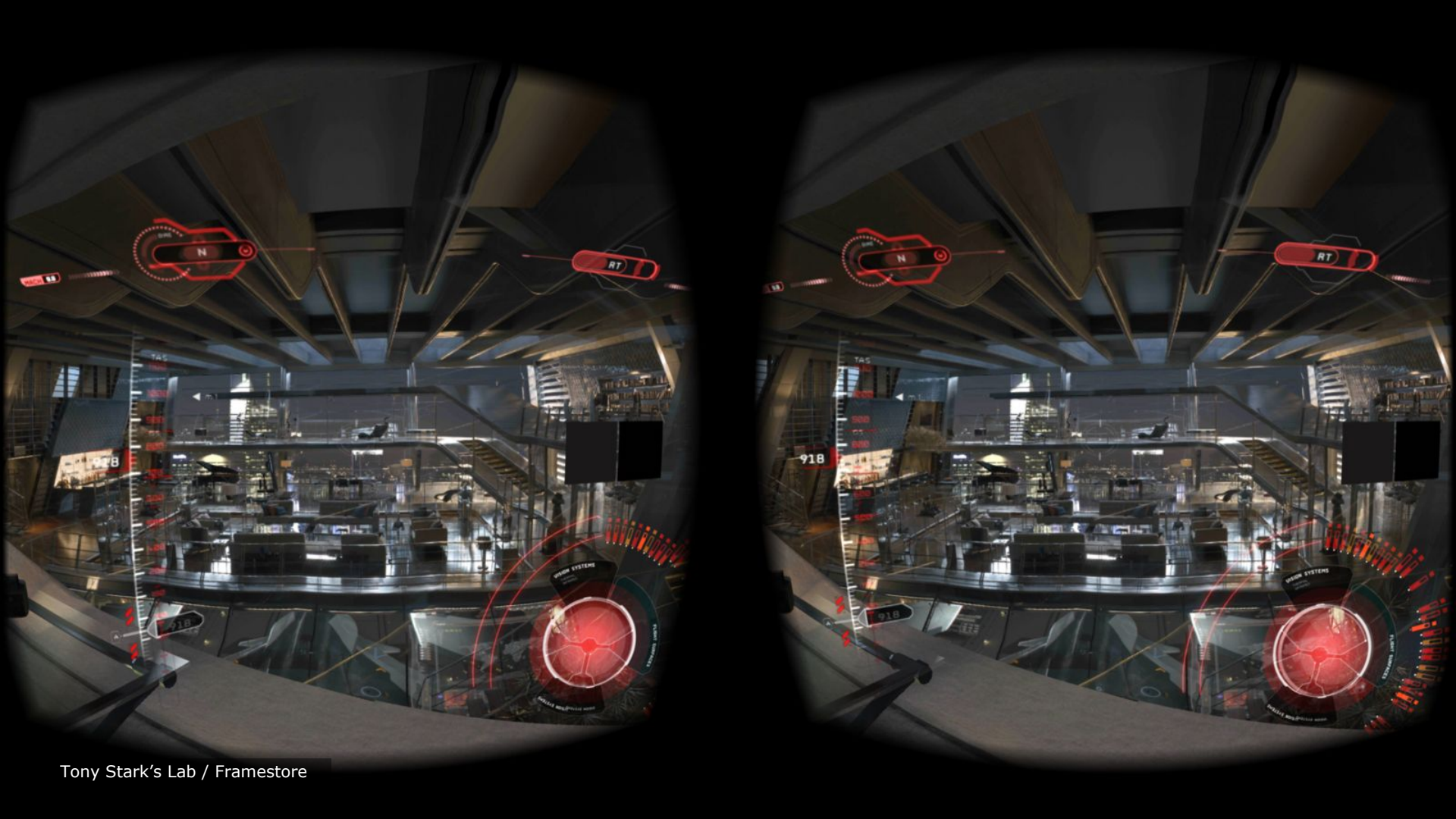
Omer Shapira
Sr. VR Artist, NVIDIA

@omershapira


Self Actualiz-ation
Self Esteem
Social Needs
Safety
Physiological

FEAR NOT
FOR I AM
WITH YOU


Horizon /
Omer Shapira



Tony Stark’s Lab / Framestore

Interstellar VR / Framestore

#Trailscape / Framestore

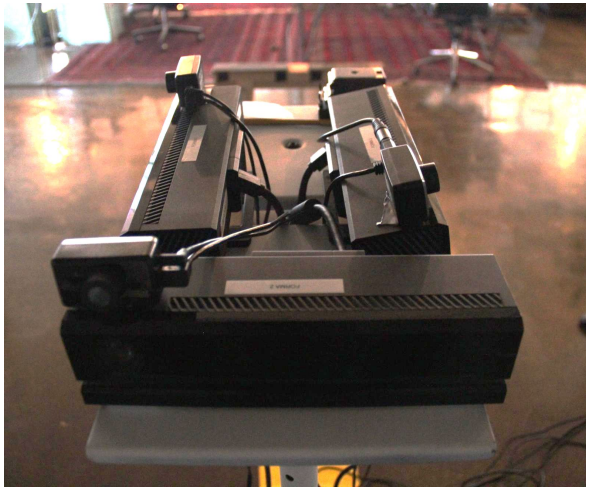
Carol / The Weinstein Company

Dearest… / Fake Love

Forma / Fake Love

VR Funhouse / Nvidia

Always Be Prototyping



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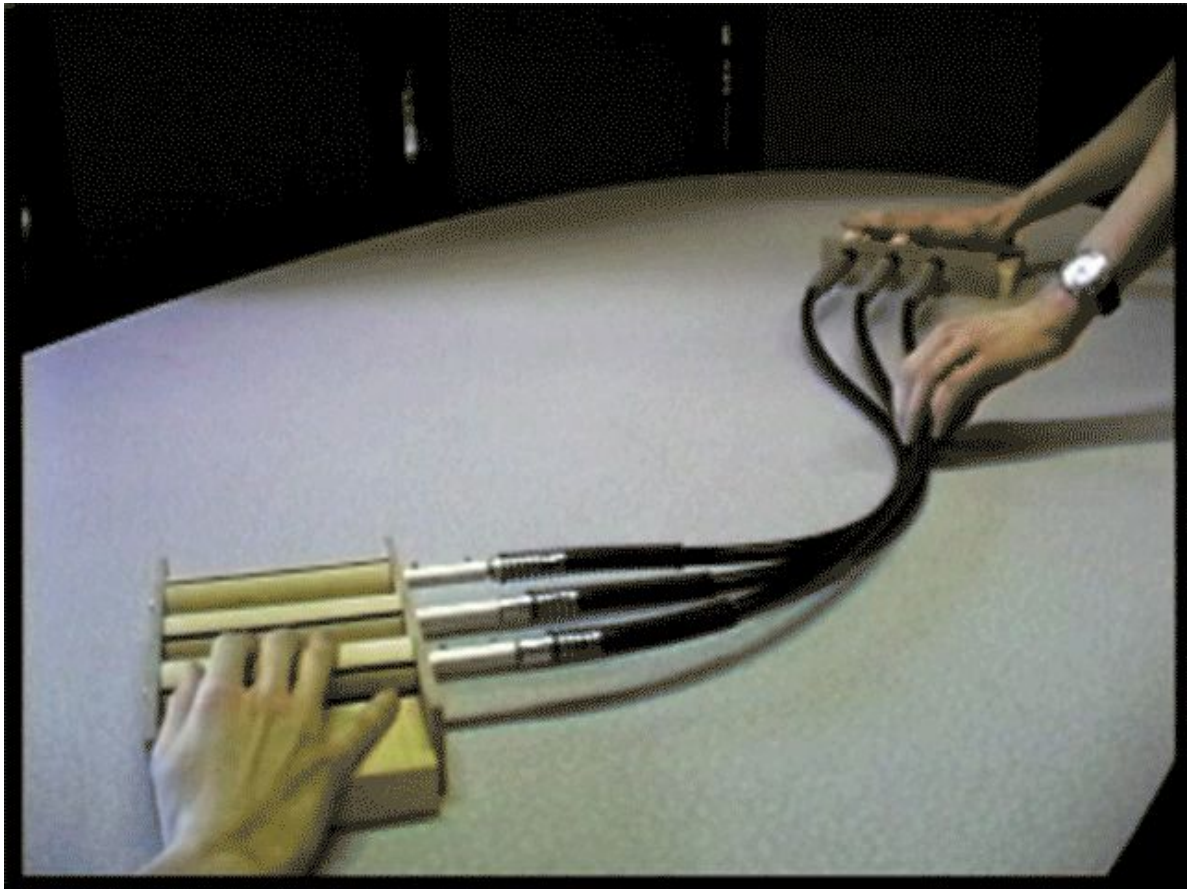
Observation:

VR is not a Medium

InTouch
Hiroshi Ishii
1998



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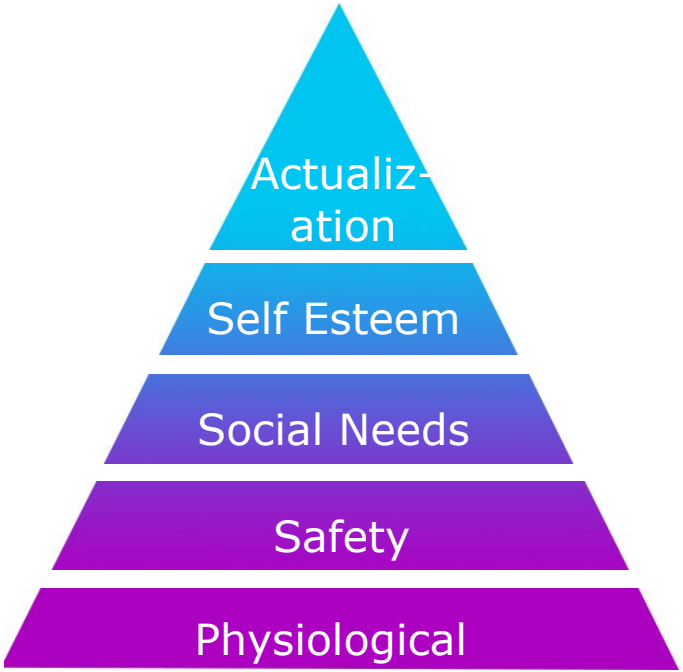
Observation:

VR Could Use *a* Maslow's Hierarchy

Maslow's VR Benchmark



Nope
Not There Yet
Communication, Semantic Reaction
Shields, Weapons, Personal Space
Locomotion, Physical Reaction

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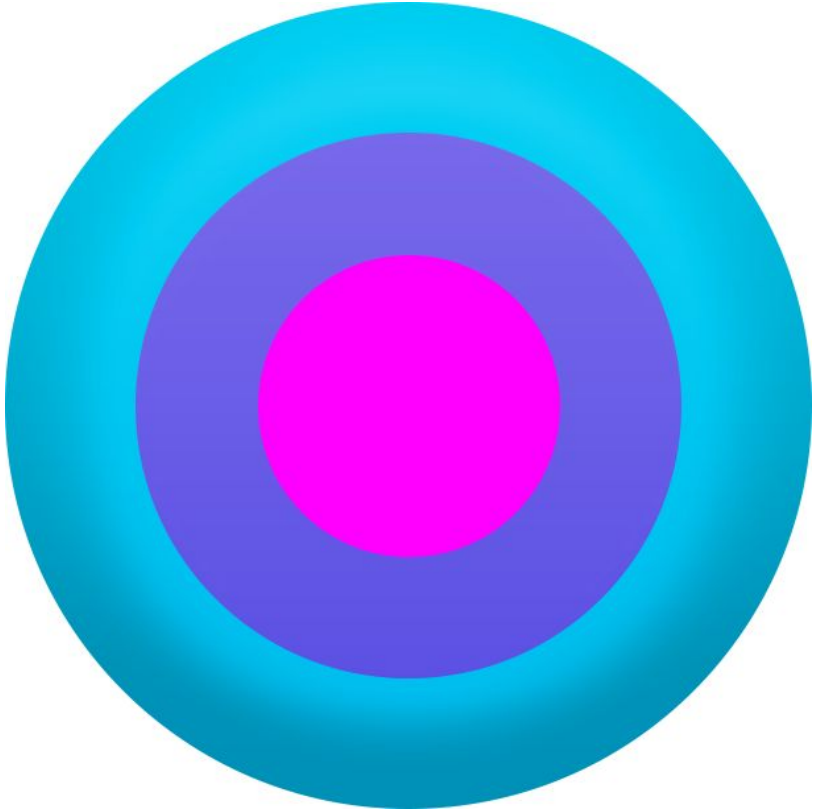
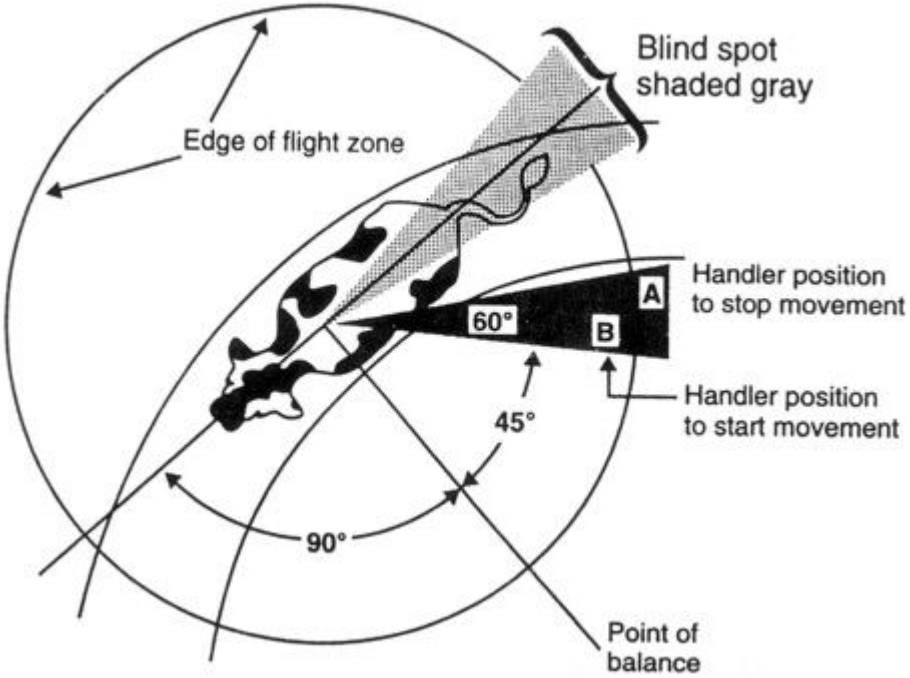
Observation:

Our Body Has an LOD

Here, Near, Far

- Our body is hella granular.
- Periphery granular by proxy.
- Things within our reach and obstacles are cached closer to our CPU.





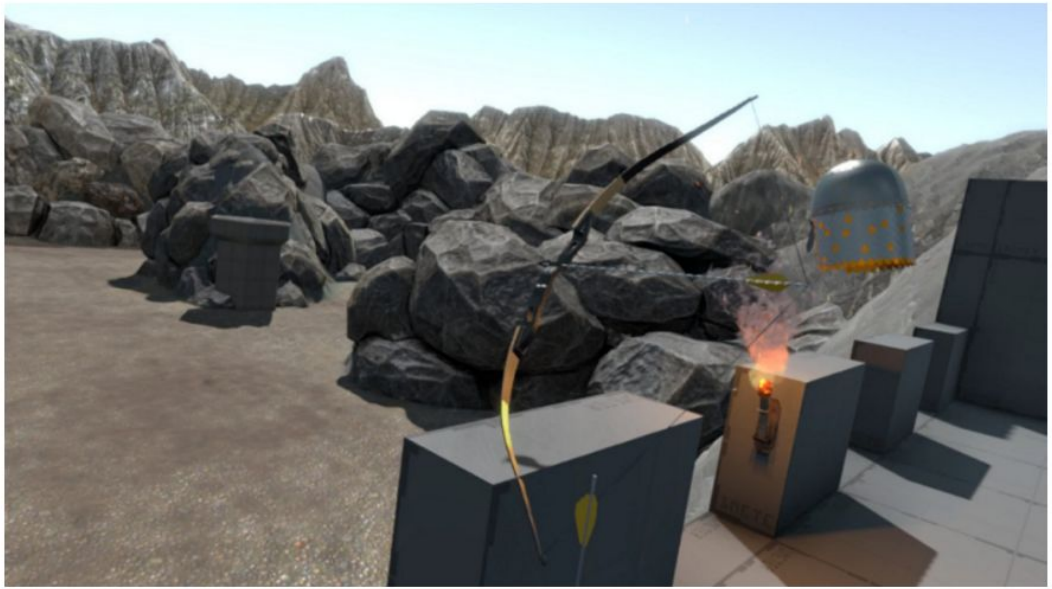
The Design and Construction of Facilities for Handling Cattle

Dr. Temple Grandin

VR Developers Add 'Superpower' To Their Game To Fight Harassment

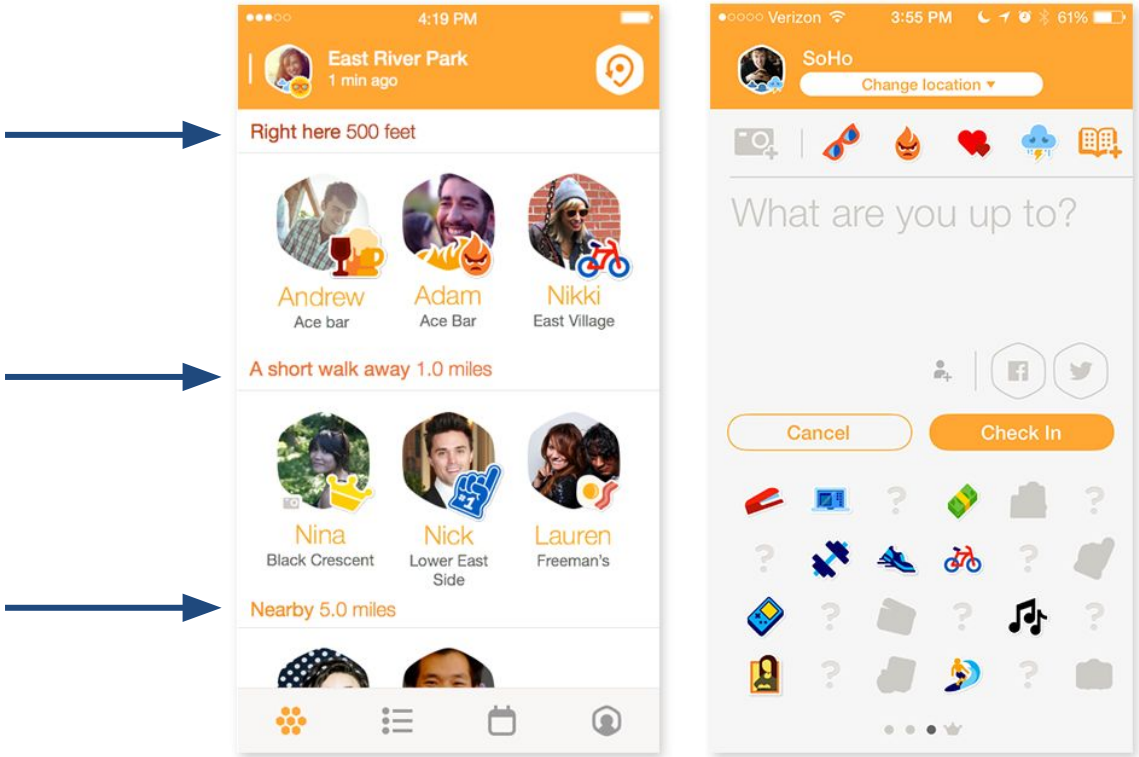
Cecilia D'Anastasio
10/26/16 1:00pm · Filed to: VIRTUAL REALITY

661 31



QuiVR

Kotaku ,10/26/2016



Swarm UI

Image: [Zack Davenport]

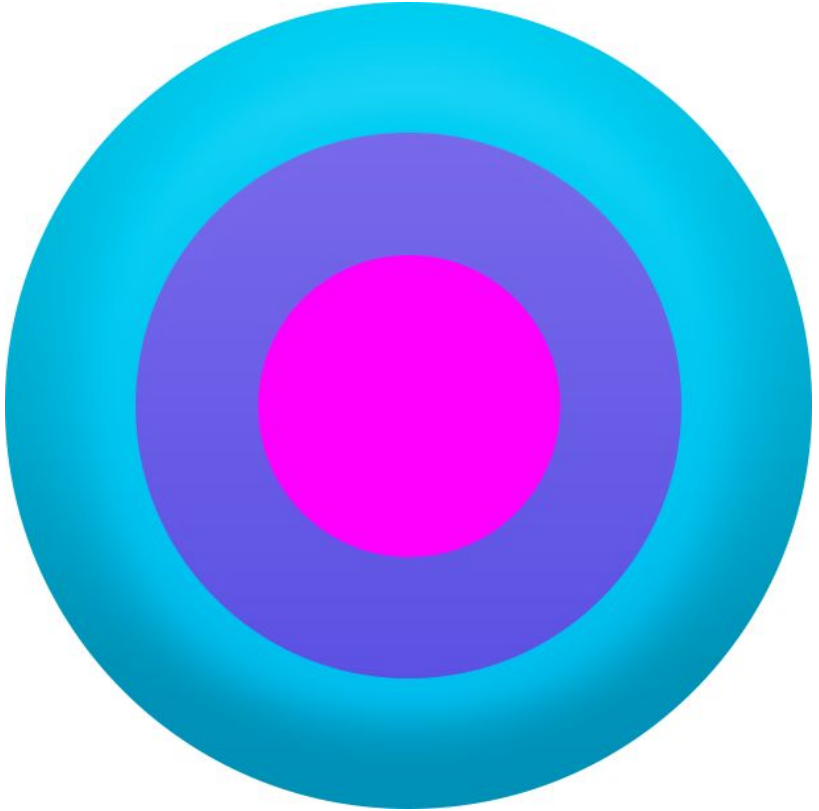
Here, Near, Far

- Usability

  Reach, Step, Walk
- Threats

  Freeze, Flee, Hide
- Attention

  React, Note, Ignore



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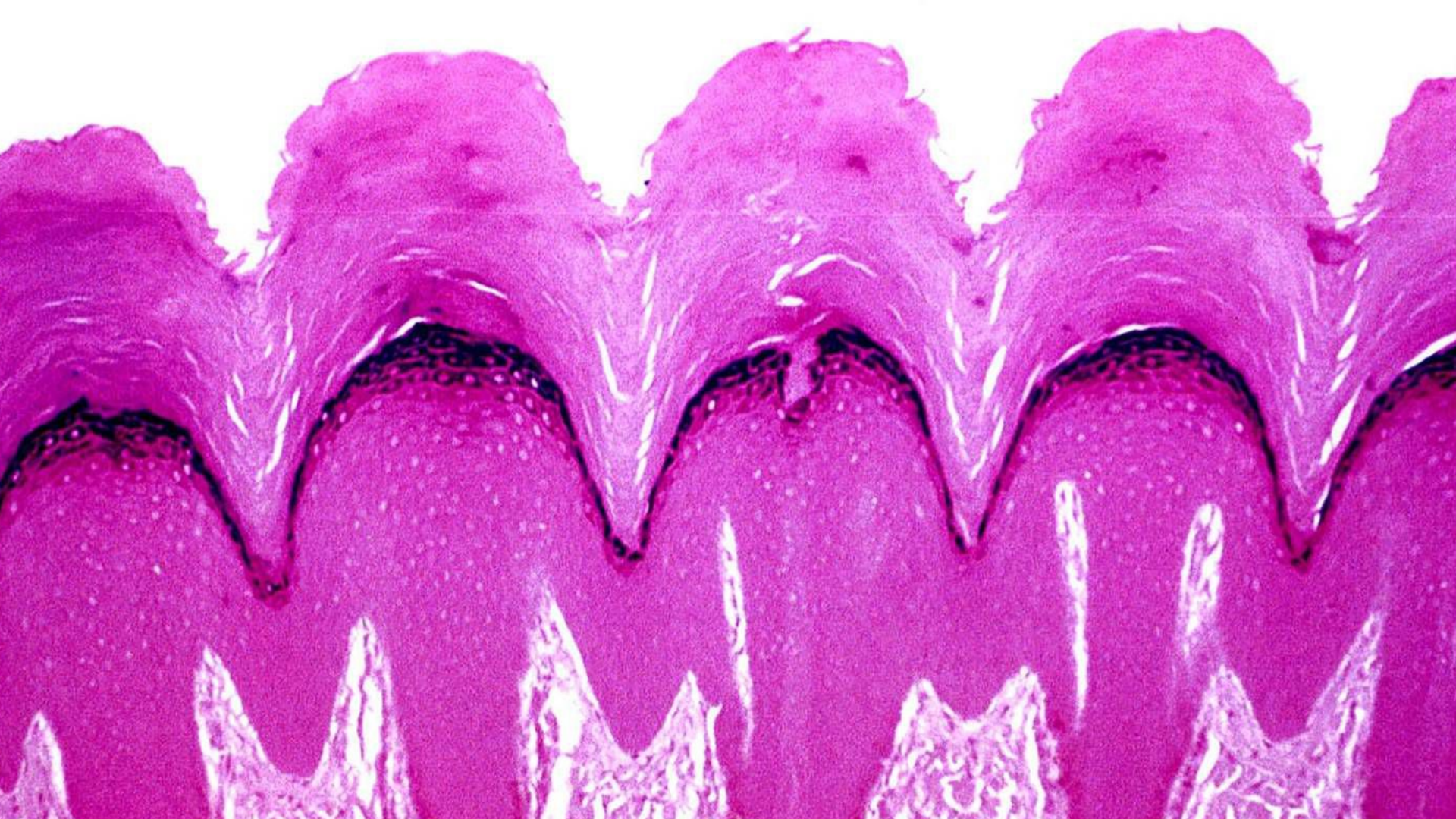
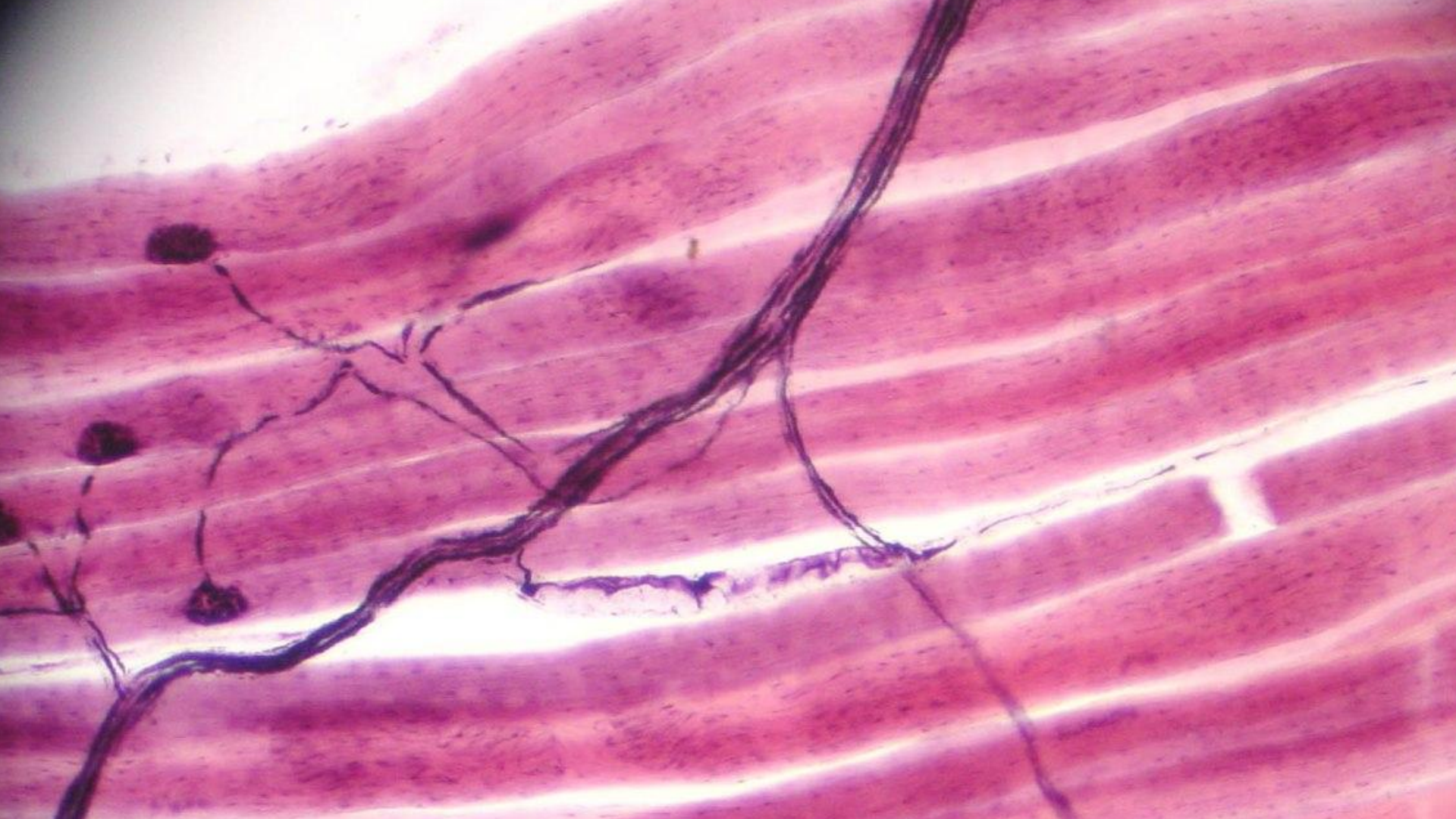
Observation:

Not All Senses Are Born Equal





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Corollary:

Proprioception == Ground Truth

Photo: David Stephenson

MERRELL

#Trailscape

Studio: **Framestore VR**

Brand: Merrell (Nike)

Client: Hill Holliday

Venue: Sundance 2015

2014-2015

Photo : Mike Rubenstein

Focus Handoff

Same Trick as in Magick and VFX.

1. Form a path for recovery
2. Create Distraction
3. Do the Thing™
4. Continue like nothing happened.

Focus Handoff

- **Smoke Covers User:** Visual field gone, Orientation remains
- **Rumbling Floor:** Orientation lost momentarily
- **Wind (Machine) Changes Direction:** User Accepts new orientation

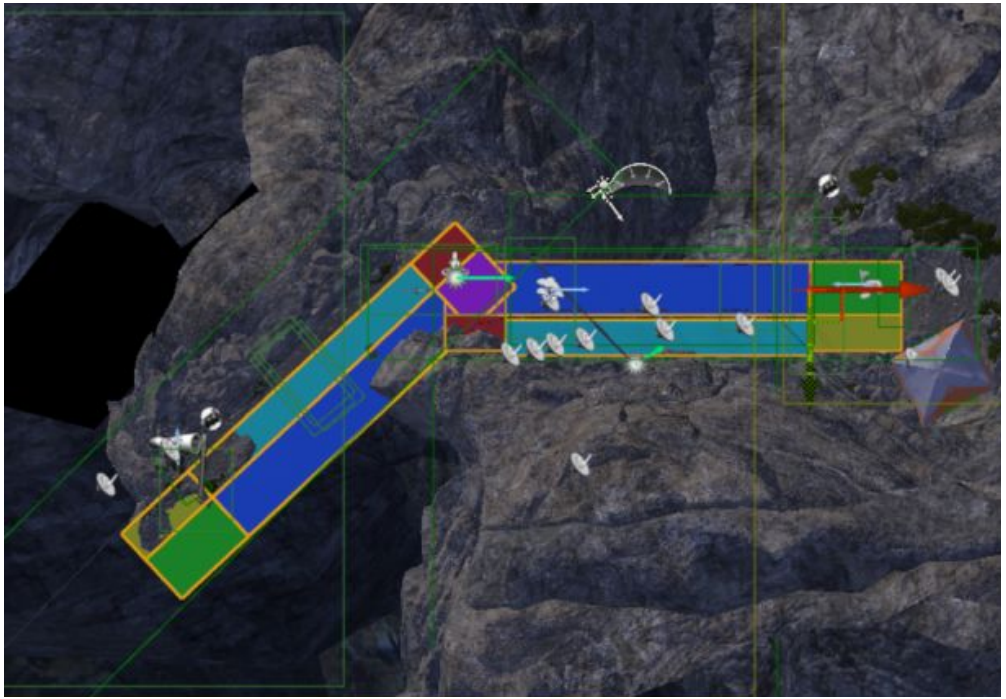
Top
Lit
Show
10
10°
0.25
4
1m
X
Level: Merrell_FullBuild_v003 (Persisten

1-Step Redirected Walking

VR turn: **50°**

R turn: **180°**

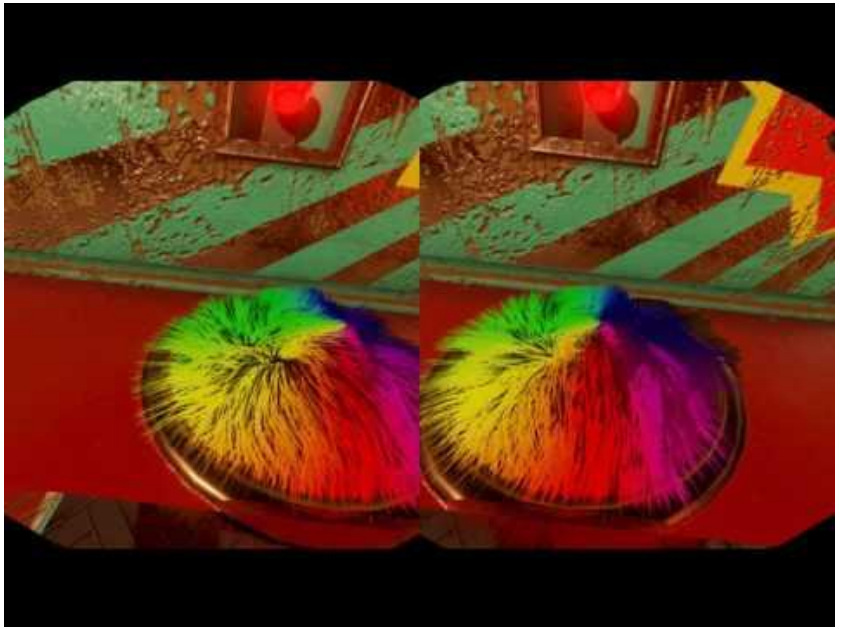
Focus Handof 👌



TICKET

NVIDIA VR Funhouse

- Started as a physics experiment
- Discovery: Physics alone is an interesting VR interaction
- Effort spent on adapting playground to human body



Freedom is too Free

- Realistic + Expressive = Potential distraction.
- Had to come up with a constraint
- **Metric:** Time spent on intended purpose vs time spent exploring.

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Observation:

The Only Thing to Figure Out in VR is What People Want to do in VR.

-Greg Borenstein

Expressivity Ratio

Let $\boldsymbol{a}$ be an action we can perform IRL and in VR.

$$\text{Expressivity } \boldsymbol{E(a)} = \frac{\textit{Time to complete } \boldsymbol{a} \textit{ IRL}^{1}}{\textit{Time to complete } \boldsymbol{a} \textit{ in VR}}$$

1 with the best tool in this context.

"The Leatherman Problem"

Let $\boldsymbol{A}$ be your entire set of actions.

Minimize $|\boldsymbol{A}|$[1] While maximizing $\boldsymbol{E(a)}$ for each action in the *Near* context.

1 The amount of actions in $\boldsymbol{A}$

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Observation:

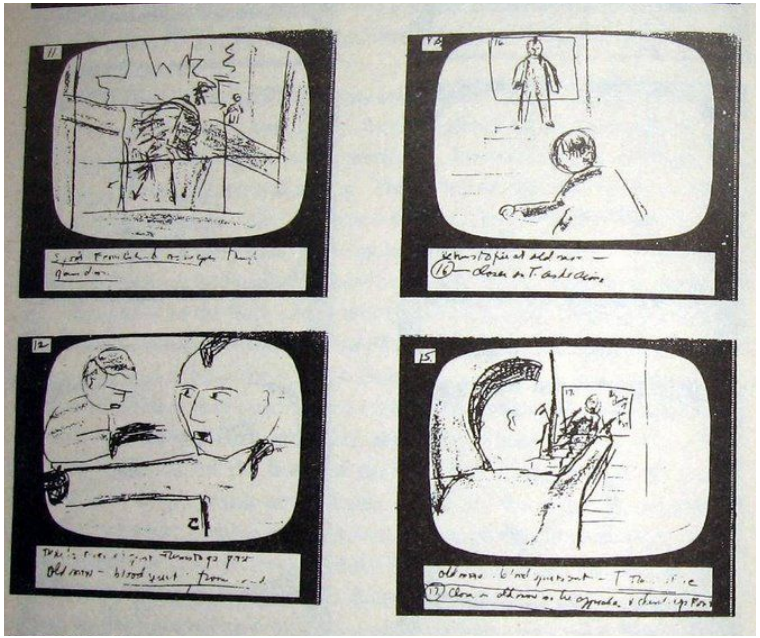
“What Does it Feel Like?” Is a Question You Can’t Answer

The Role of Prototypes

- Solving Parallel Problems in Sync
  - Reality checks
  - Creative blocks
- Cheap, Fast, Flexible
  - Starts Earlier than you think
  - Promise First, Implement later

Storyboarding

- Resolves Placement and Pacing
- Simple enough to iterate on the spot



Martin Scorsese's Storyboards for "Taxi Driver"

Spherical Storyboarding

Carol: Dearest...

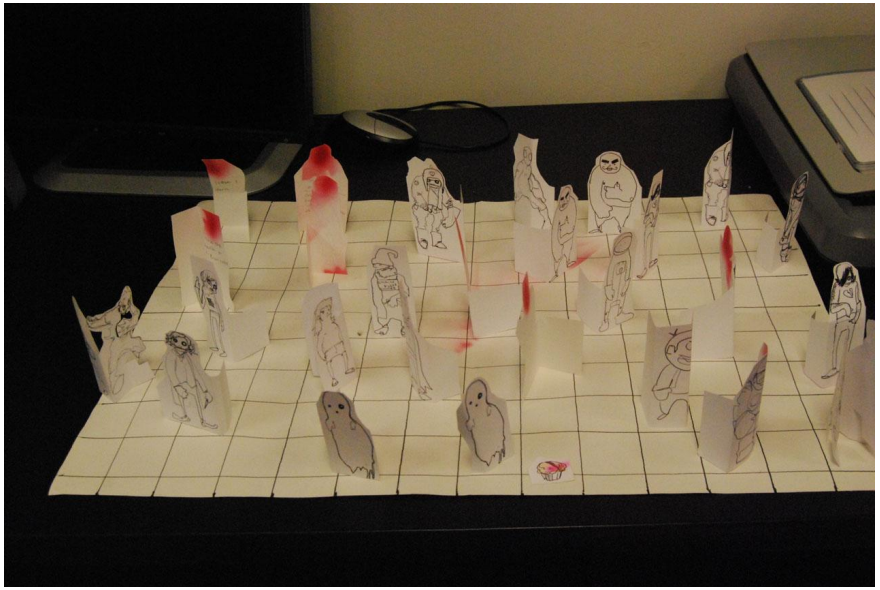
Studio: **Fake Love**

Client: New York Times

Brand: Weinstein Company

Paper Prototyping

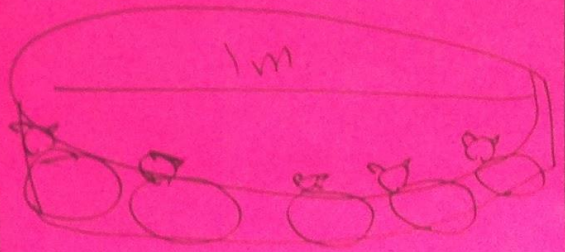
- Debugging game logic without writing code
- Moving buildings that don’t exist
- **Discovering a player’s emotional gamut**



Dead Reckoning

- **Designer is blindfolded**, points at POIs
- Helpers have **post-it notes**, tag POIs
- POIs replaced by objects
- **Only the Designer speaks.**
- Helpers sketch the design **as 3rd person**.

Mattress platform



Kitten

Dead Reckoning

- **First timers can design VR with precision**
- Experts can detect problems
- Iteration time: 15-20mins
- Execs don’t get weirded out by it

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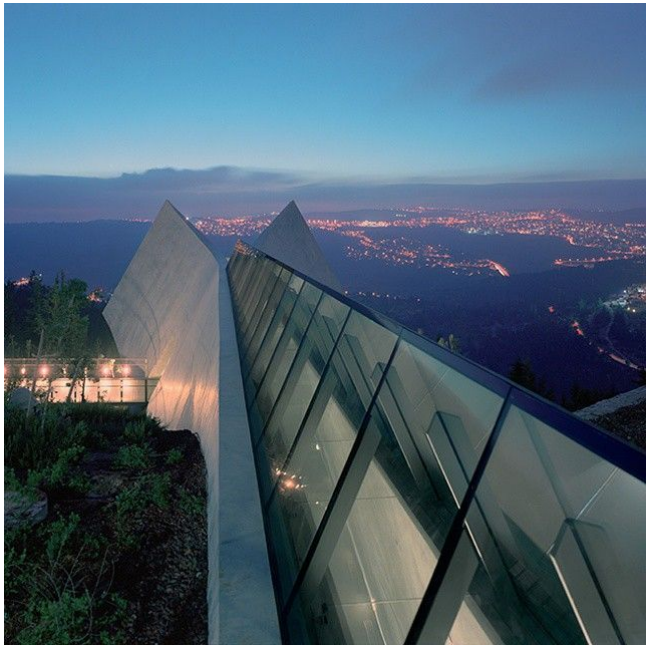
Observation:

A Nonlinear Experience is Piecewise-Linear.

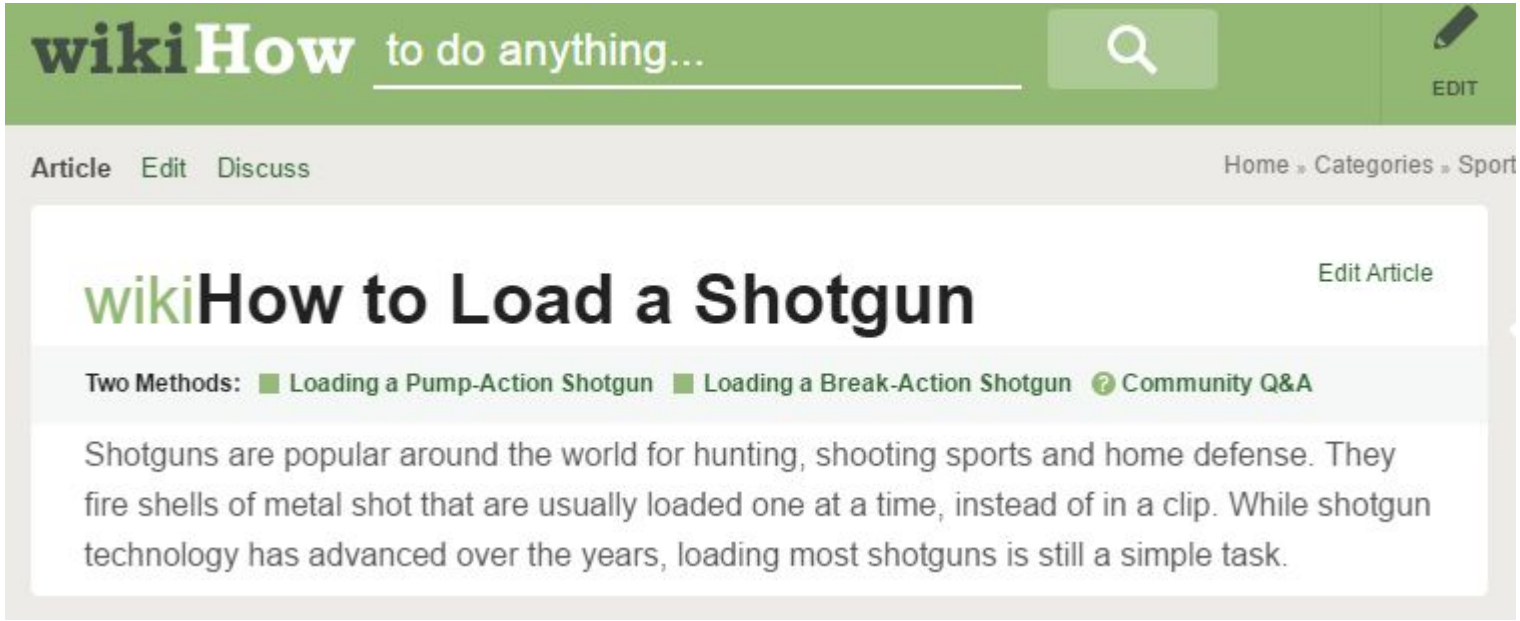
Piecewise-Linear: Villa Savoye

Emotional spaces connected by paths.

Piecewise-Linear: Yad Vashem



Piecewise-Linear: Assembly



Source: Dr. Temple Grandin

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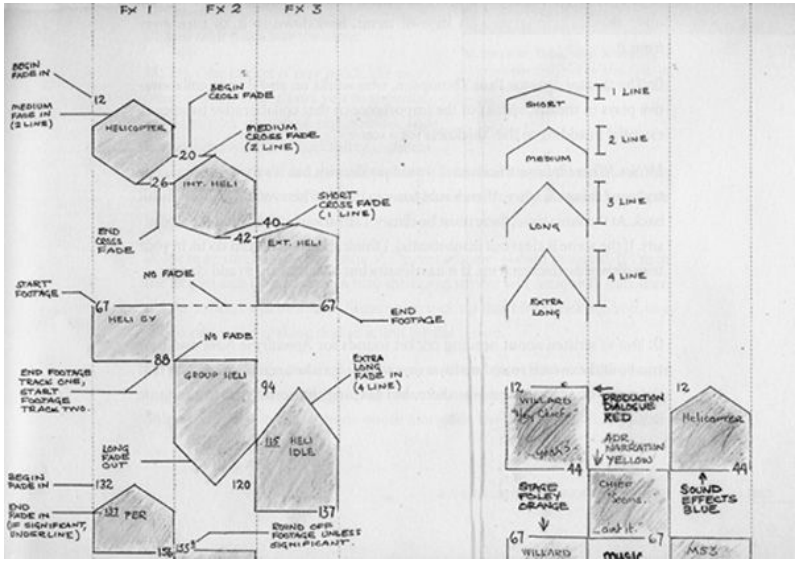
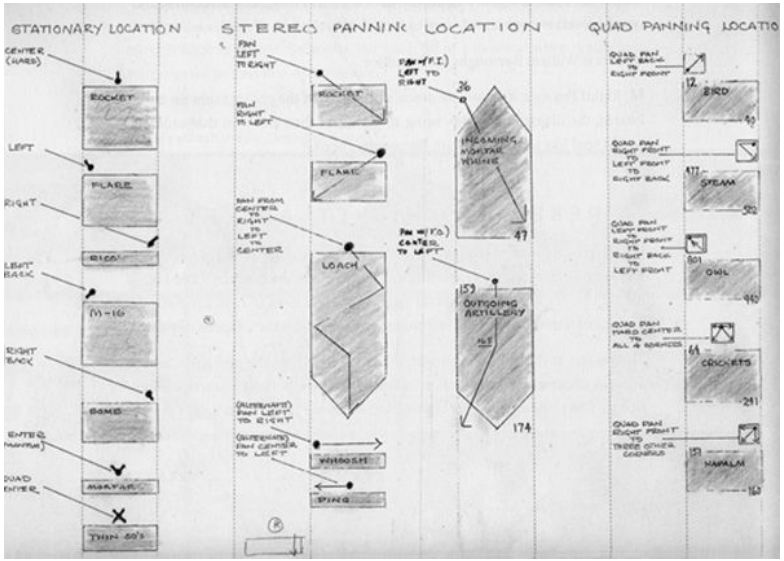
Corollary:

Emotional Graphs

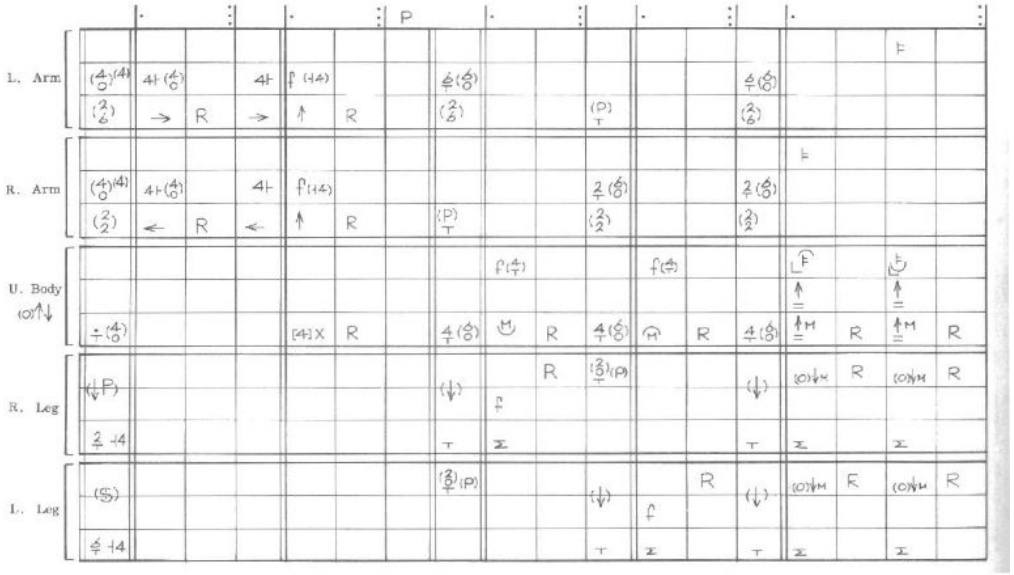
Emotional Graphs



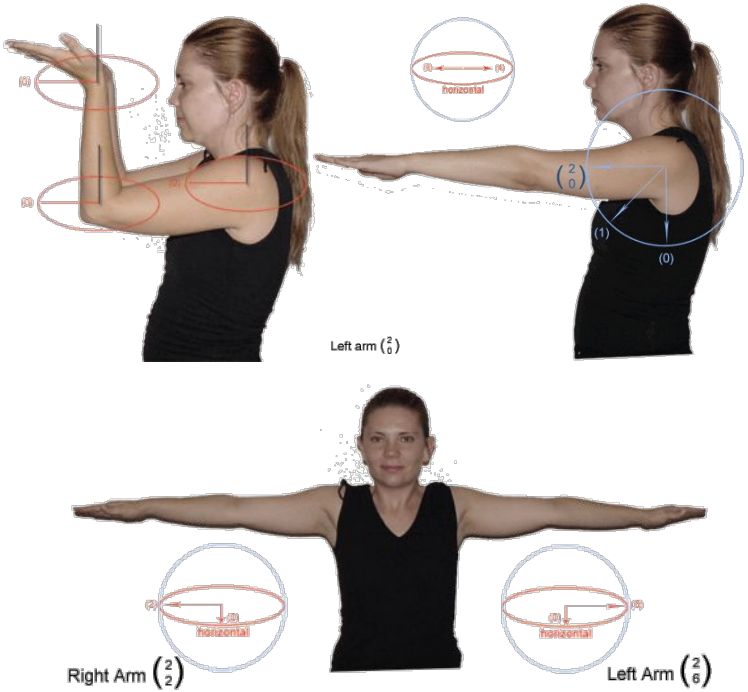


Walter Murch sound mix graphs for *Apocalypse Now*

Emotional Graphs



Eshkol-Wachman movement notation



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Summary

Prototyping Golden Rules

- Simpler == Faster == Better.
- Don’t emulate reality - it’s already there
- Work with the least stimulation.
- Shift focus between linear objects.
- Plan the emotional graph.
- Build unshippable demos.

Experience Metrics

- Is it **Coherent**? (Here, Near, Far)
- Does it satisfy **Maslow's Hierarchy**?
- Is **expressivity** balanced w/ **interest**?
- Is *anything* in the way of **Proprioception**?

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One More Thing:
People will always tell you that a medium is finally stable.

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@omershapira