



DS579 Therapy, VR, and Meditation

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What is the goal?

The ability to see the natural state of one's own mind, which is free from clinging and suffering.

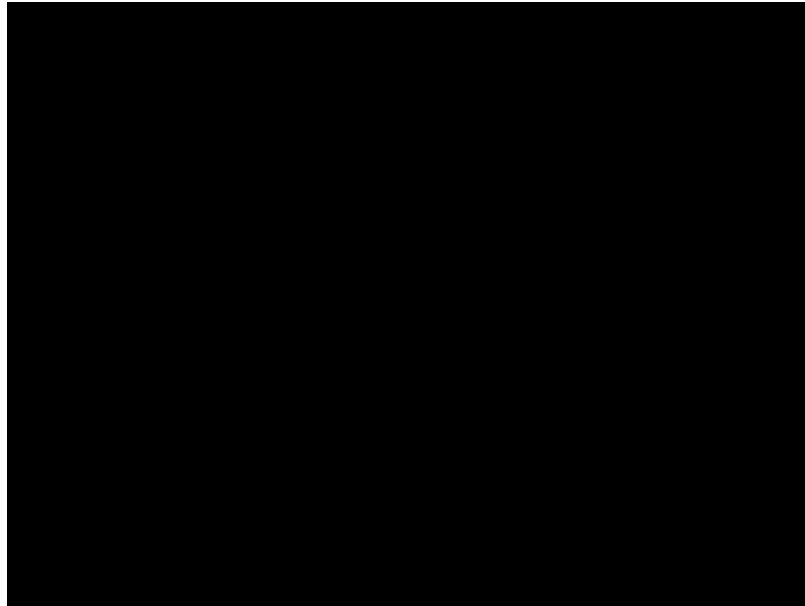


Approach 1: Active

Theory (based on the effectiveness of EMDR): forcing one's attention to stay on a task will reduce their tendency to associate with their thoughts.

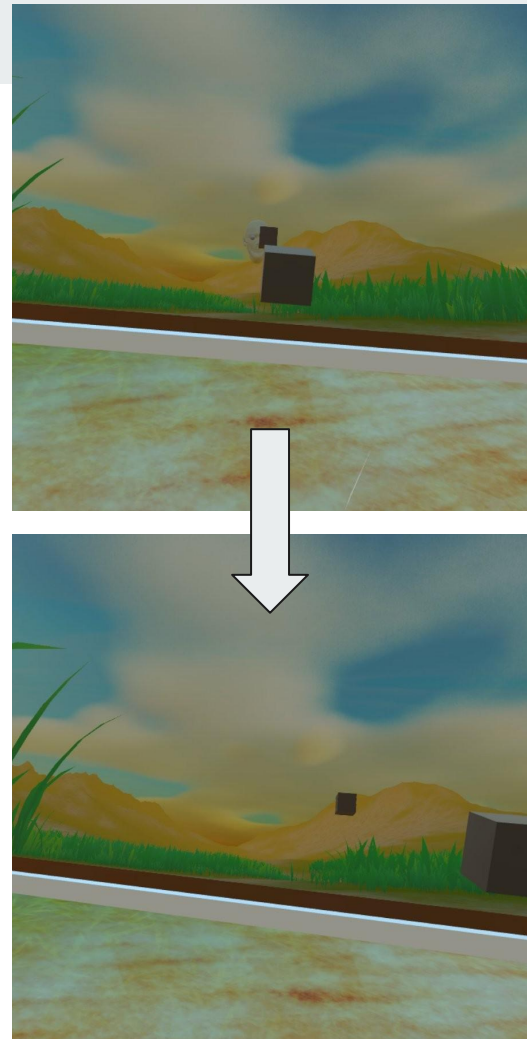


Approach 1: Active



Approach 1: Active

Also tried fading head transparency and using hand collisions instead of gaze; None of these treatments were 'meditative'

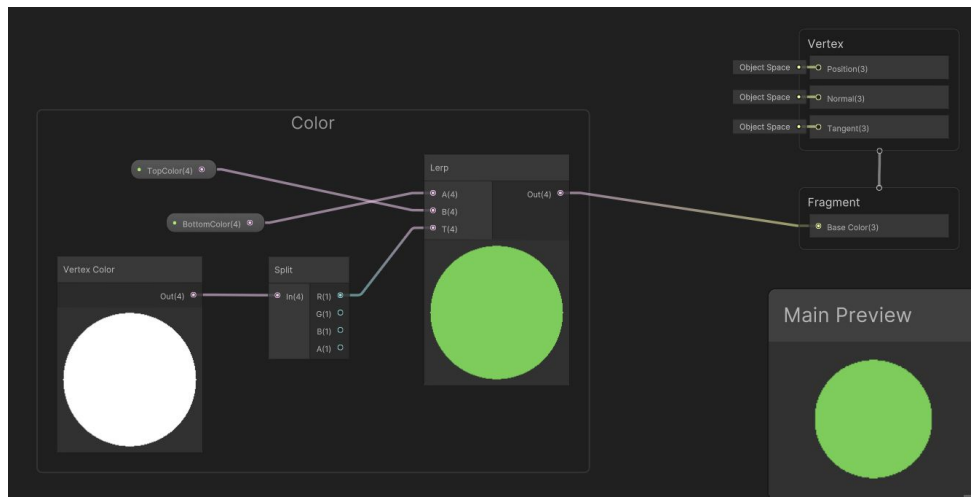
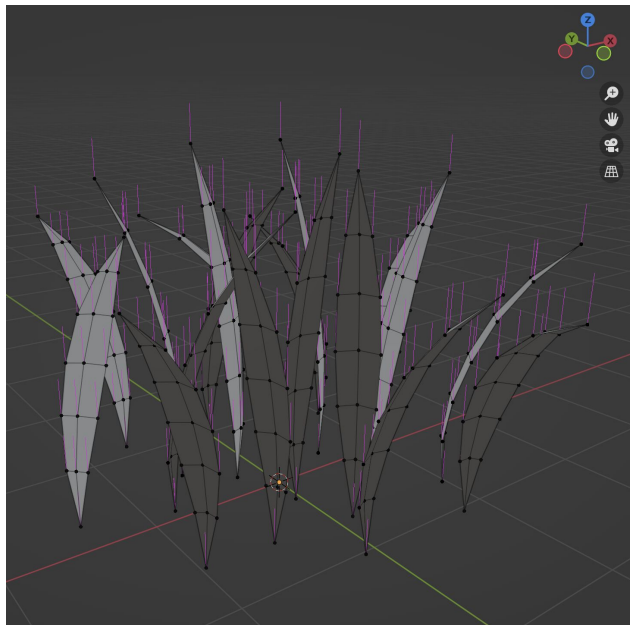




Approach 2: Passive

Theory (based on the effectiveness of breathing meditation): making the environment reflect the user's breath will make it easier for the user to focus on their breath and not get lost in thought.

Approach 2: Passive



Approach 2: Passive



Approach 2: Passive





Challenges w. Approach 2: Passive

Trees, terrain system, windzones, shaders ...

Even after much fine-tuning, the grass movement didn't feel natural when controlled by the user's breathing.

But! The game environment responding to the user's breath felt very interesting.

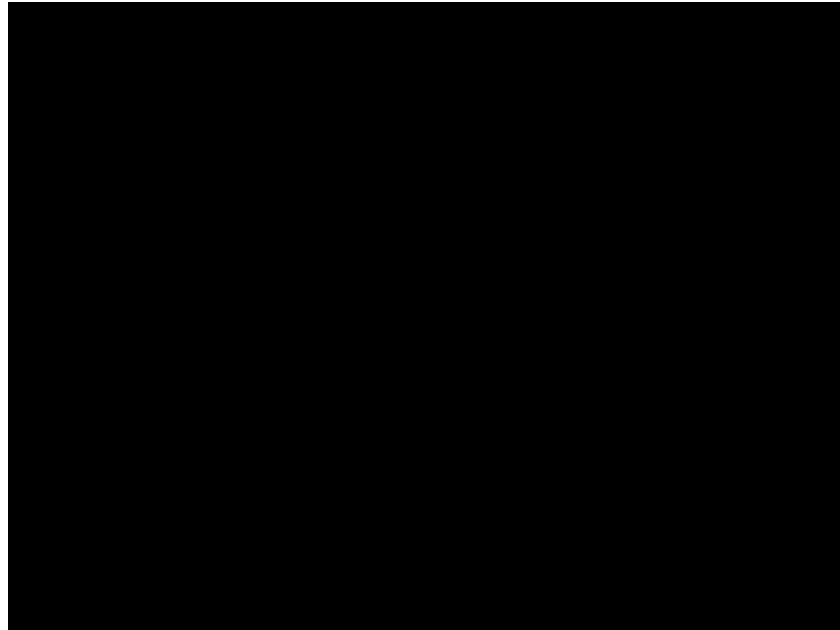
Approach 3: Overwhelming Passive

Theory (based on the effectiveness of psychedelics): the combination of awe-inspiring visuals and louder breathing will bring about a meditative state.





Approach 3: Overwhelming Passive





Challenges w. Approach 3: Overwhelming Passive

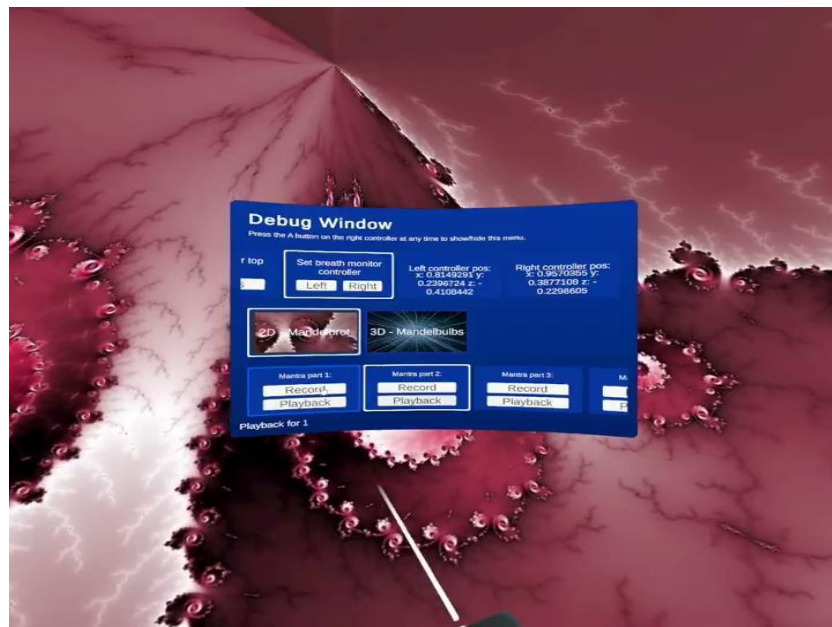
- Overall, quite effective
- Somewhat uncomfortable
- Video Player NONSENSE
- Repositioning

Approach 4: Breathing Mantras (WIP)

Combine breathing and
'externalized' mantras. Like
reverse schizophrenia.

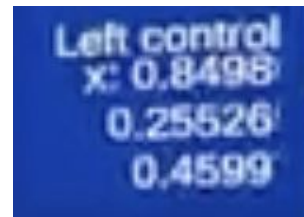


Approach 4: Breathing Mantras (WIP)



Challenges w. Approach 4: Breathing Mantras (WIP)

Super frustrating! Controller positions stop updating after a little bit.



```
private void GetControllerPos() {  
    curPosLeft = OVRInput.GetLocalControllerPosition(OVRInput.Controller.LTouch);  
    curPosRight = OVRInput.GetLocalControllerPosition(OVRInput.Controller.RTouch);  
}
```




Challenges w. Approach 4: Breathing Mantras (WIP)

Inhale/Exhale
detection took many
iterations to get right.
Simplicity was key.

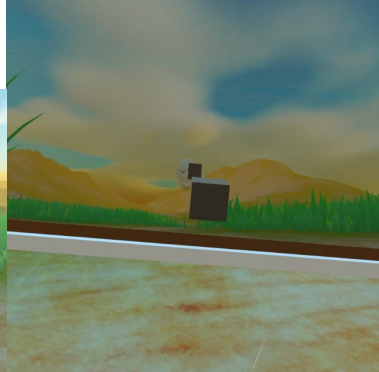
```
private void BreathUpdate() {  
  
    if (isStartPosSet && isEndPosSet && lastPos != Vector3.zero) {  
        float distLastToBottom = Vector3.Distance(lastPos, bottomPos);  
        float distCurToBottom = Vector3.Distance(curPos, bottomPos);  
        float distLastToTop = Vector3.Distance(lastPos, topPos);  
        float distCurToTop = Vector3.Distance(curPos, topPos);  
        if ((distCurToBottom - distLastToBottom > epsilon) &&  
            (distLastToTop - distCurToTop > epsilon)) {  
            // Moving farther away from bottom, closer to top (inhaling)  
            AudioPlayOnInhale();  
        }  
    }  
  
    lastPos = new Vector3(curPos.x, curPos.y, curPos.z);  
}
```

Takeaways

Approach 2
(passive)



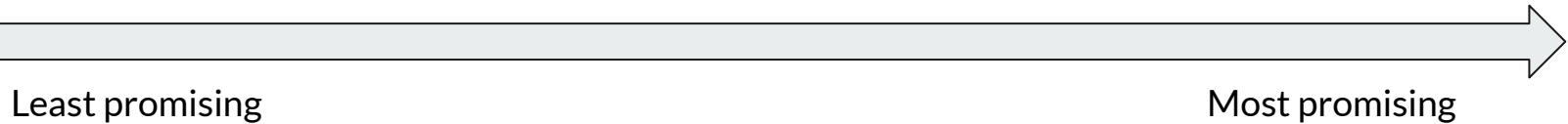
Approach 1
(active)



Approach 3
(overwhelming passive)



Approach 3
(breathing mantras)





Next Steps

- Fine tune Approach 4 (relaxing music, UI, catch bugs)
- Try Approach 4 on other people
- DRUGS



Credits

1. Unity Asset Store -> [Fantasy Skybox](#) (Assets used: base version of terrain, skybox)
2. Head 3D model from Free3D.com
3. Relevant Unity Packages -> Oculus XR Plugin, Shader Graph, TextMeshPro, Unity UI, Visual Studio Code Editor, XR Plugin Management
4. Many online resources like Valem's YouTube channel, and especially the Unity forums (as well as StackOverflow)



Citations

1 Shamil Chandaria, the Bayesian Brain and Meditation <https://www.youtube.com/watch?v=Eg3cQXf4zSE&t=3706s>

2 Vice It's Time to Start Studying the Downsides of Psychedelics
<https://www.vice.com/en/article/m7vxm8/its-time-to-start-studying-the-downside-of-psychedelics>

3 Studying Harms Is Key to Improving Psychedelic-Assisted Therapy—Participants Call for Changes to Research Landscape
<https://jamanetwork.com/journals/jamapsychiatry/article-abstract/2802941>

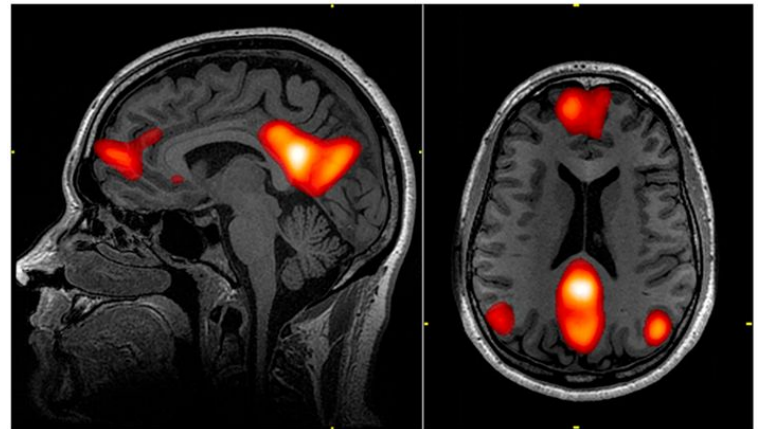
4 Risks of Psychedelic Use <https://portlandpsychotherapy.com/risks-of-psychedelics/>

5 Virtual Reality and Psychedelics for the Treatment of Psychiatric Disease: A Systematic Literature Review
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8629068/>

Appendix - Extra Content

Psychedelic Therapy

- “Flattening the landscape of priors” ¹
- Default Mode Network
- Guaranteed results





Problems with Psychedelic Therapy²

- Requires good ‘set’ and ‘setting’
- Access (cost, legality, purity)
- Bad experience (potential abuse, SAE/“bad trip”)³
- After effects (HPPD, psychosis,⁴ difficult integration, suicidality, re-emergence of symptoms)



VR Therapy

- “Efficacy in the management of [some] phobias, [...] eating disorder, PTSD, gambling disorder, preoperative anxiety and schizophrenia”⁵
- Accessible
- Flexible (environmental control, easy to stop)



Research Questions

Does marijuana use increase the effectiveness of VR therapy? Can the combination help people achieve the meditative goal previously outlined?