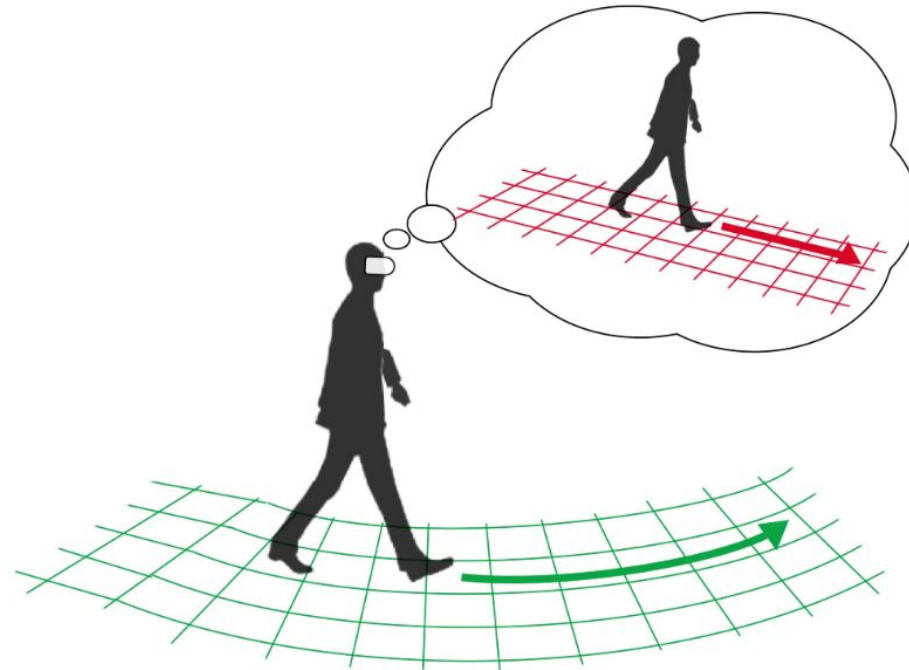
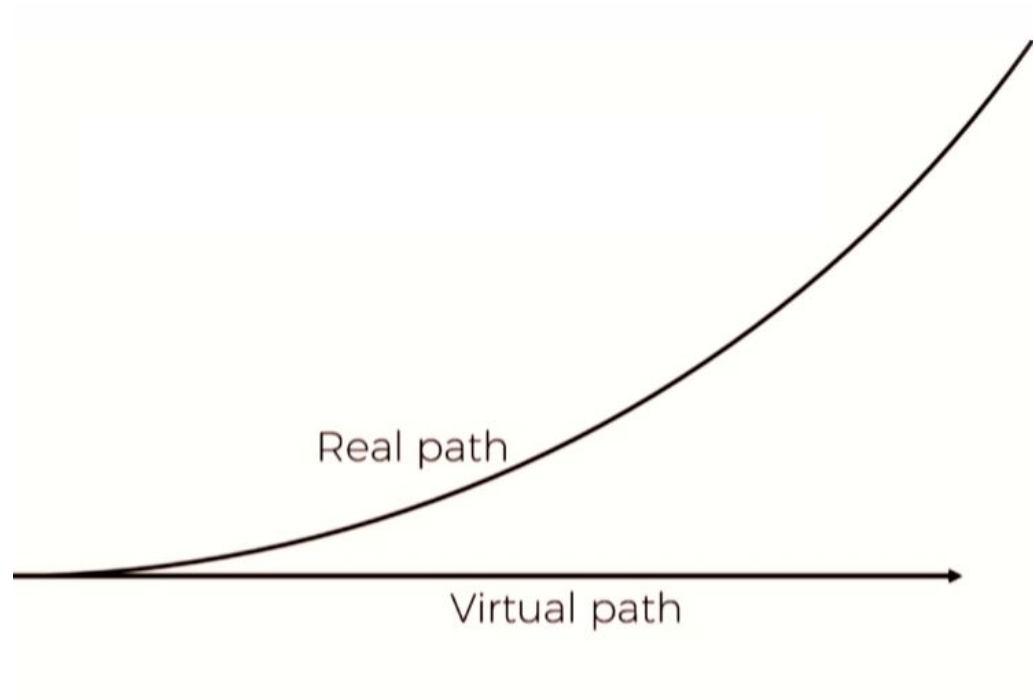


**Rethinking Redirected
Walking: On the Use of
Curvature Gains Beyond
Perceptual Limitations**

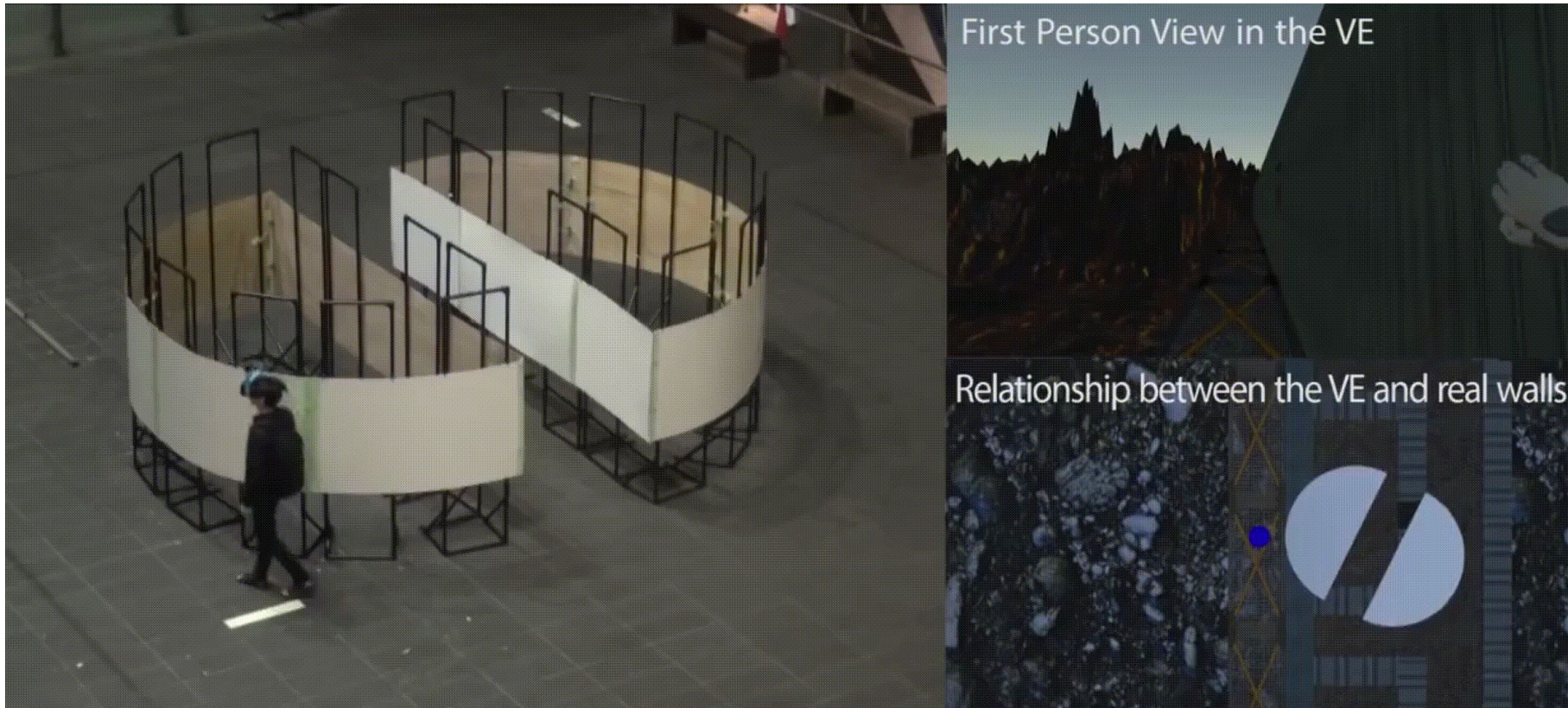
Types of Redirected Walking

- Teleportation
- Zig-zag technique
- Translation Gain
- S2O - Steer to Orbit (Curvature Gain)
- S2C - Steer to Center (Rotation Gain)

Curvature Gains

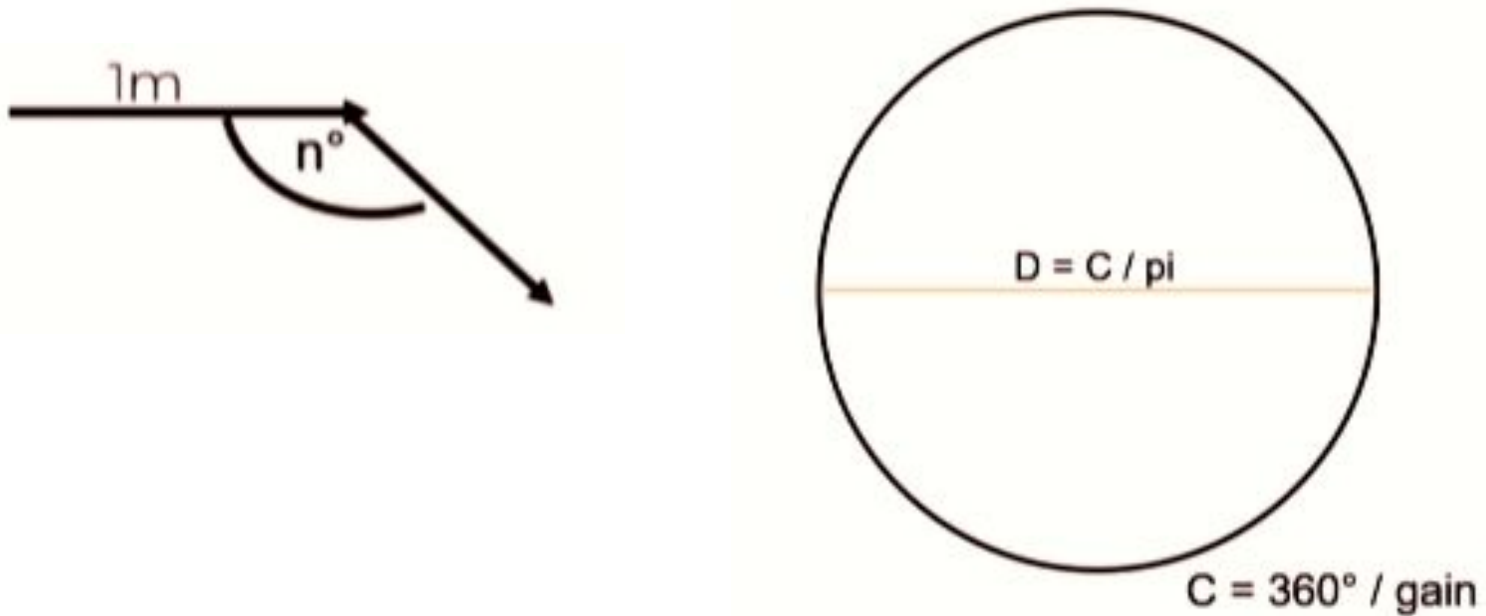


Curvature Gains



Unit of Curvature Gains

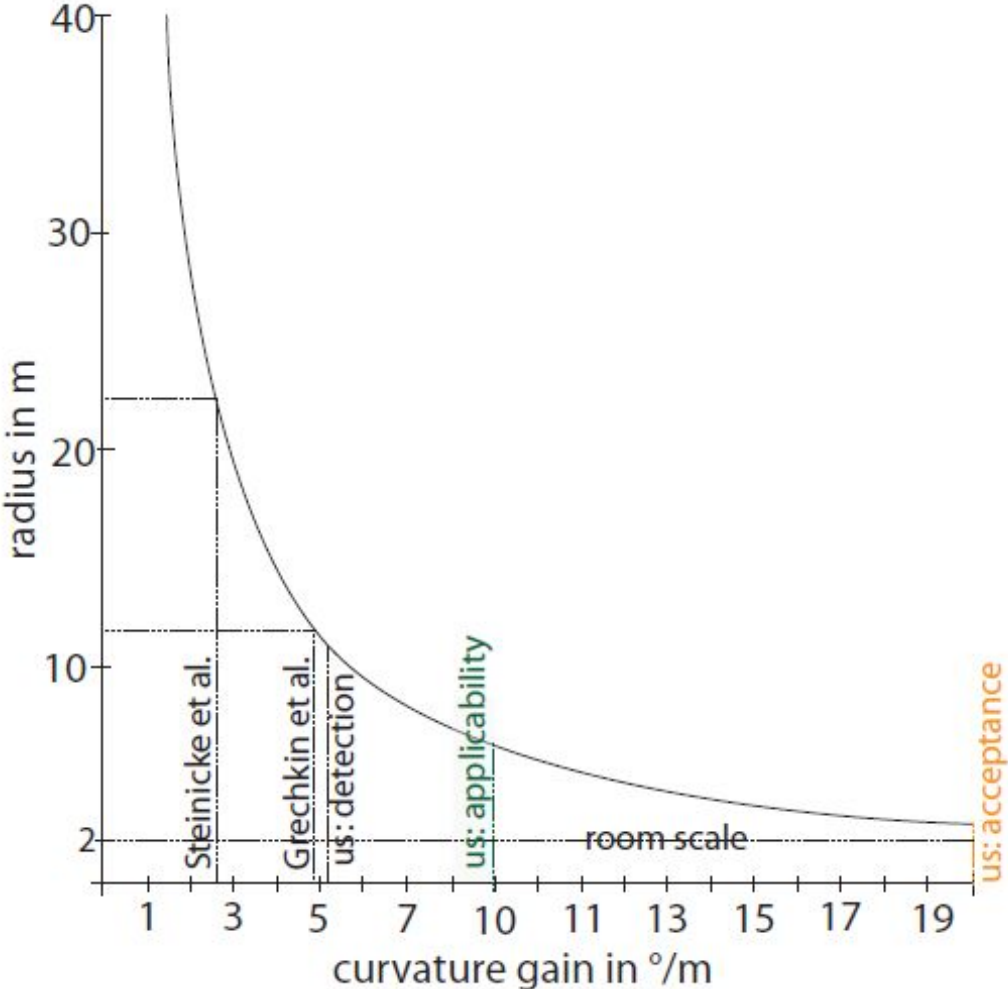
- Curvature gains are measured in $^{\circ}/\text{m}$
- The amount of area required can also be calculated based on $^{\circ}/\text{m}$ curvature gains



Threshold Limits

- Steinicke et al. suggests that the manipulation may not exceed the gain of 2.6 °/m (requires 44m x 44m space).
- Grechkin et al. suggests that it should not exceed to 4.9 °/m (requires 24m x 24m space).
- 10 °/m is the applicability threshold.
- 20 °/m is the borderline threshold and should not exceed more than that.

Threshold Limits



Limitations

- You can only walk in straight path.
- Play space area setup.
- Novice VR users can experience more nausea and motion sickness even at lower curvature gains.
- Vertical movement.

Bending Gains

- Proposed by Langbehn et al.
- Difference between Real radii and Virtual radii.
- Can be converted to Curvature gains.
- Not a viable RDW method.
- Bending gains are estimation of the direction of the manipulation and not the overall detection of a manipulation.

Implementation

- The Redirected Walking Toolkit is a unified development and deployment platform for enabling exploration of large virtual environments.
- The toolkit is presented as a Unity3D package that can seamlessly integrate with standard virtual reality configurations to enable redirected walking algorithms