



CSE 165: 3D User Interaction

Lecture #17:
3D Menu Widgets Part 2

Upcoming Deadlines

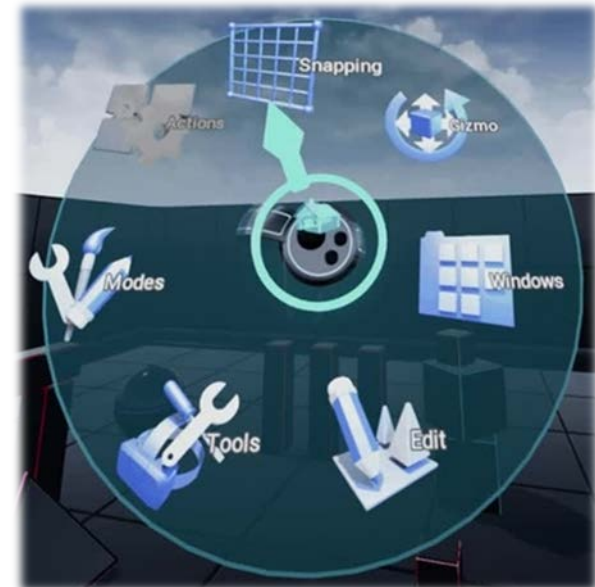
- Sunday, March 7th at 11:59pm:
 - Homework project 4 due
- Monday, March 8th at 4pm:
 - Discussion Project 4 and Final Exam
- Sunday, March 14th at 11:59pm:
 - Homework project 4 late deadline
- Final Exam
 - 3 hour exam, **no interruptions**
 - To be taken between
6pm Wed 3/17 and 6pm Thu 3/18

3D UI Presentations

- M. Emma Morissette:
 - User Psychology (Valve / Half-Life: Alyx)
- Chao Tang:
 - VRSketchIn
- Jordan Yick:
 - Space Bender

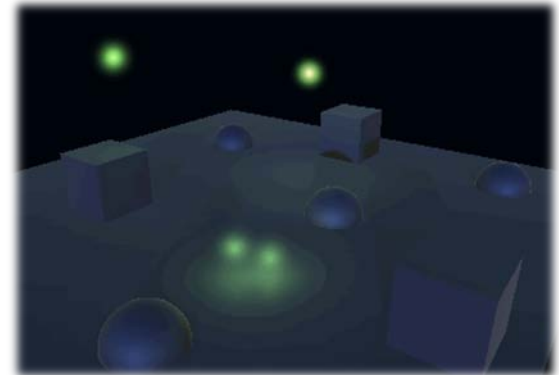
Menus

- Radial
- Drop-down
- Dialog window
- Submenus



User Hints

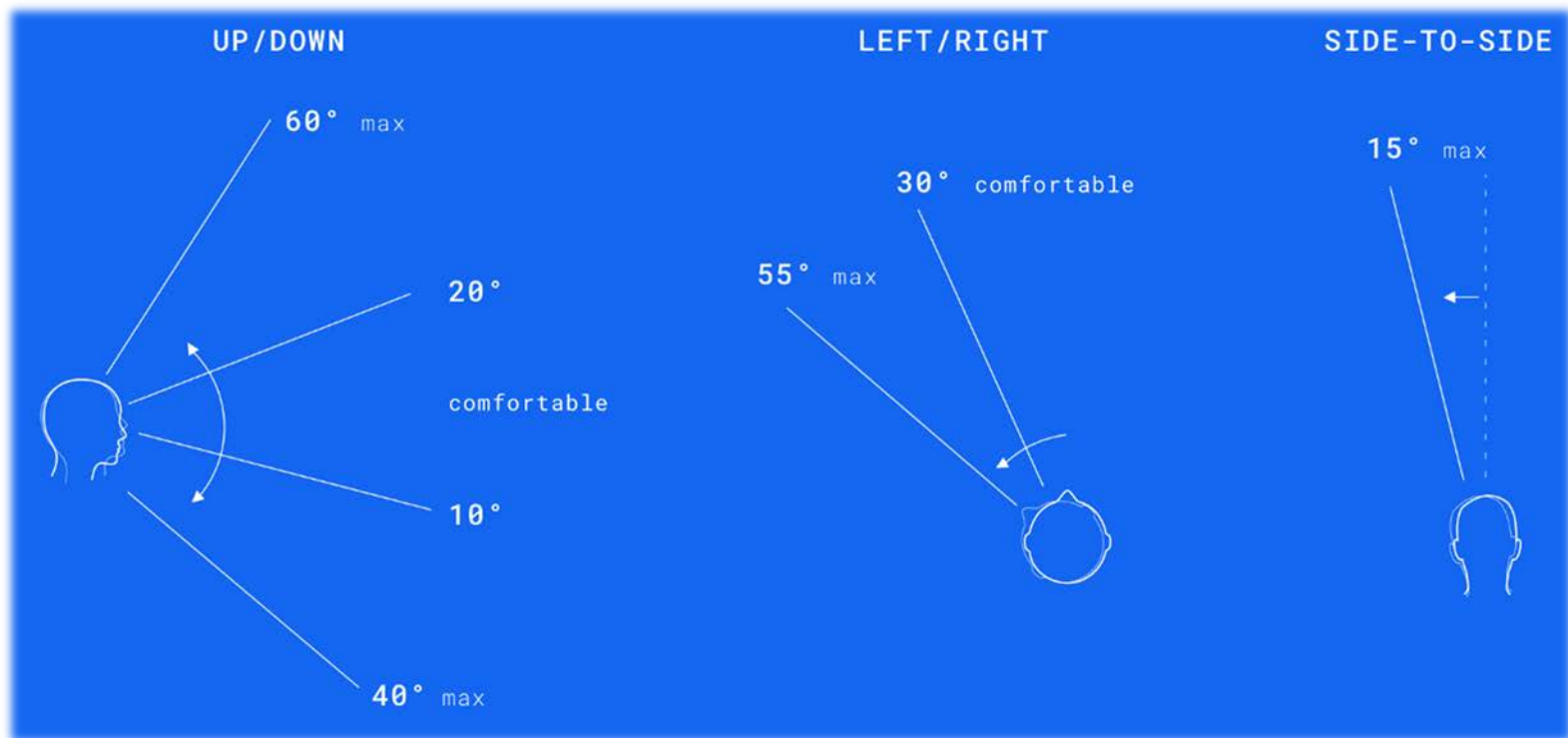
- Provide cues that an object is
 - Selectable
 - A focus
 - In-progress
 - In a certain position relative to the viewer
- Representation
 - Borders
 - Sparkles
 - Arrows
 - Glows
 - Navigational cues
 - Animation



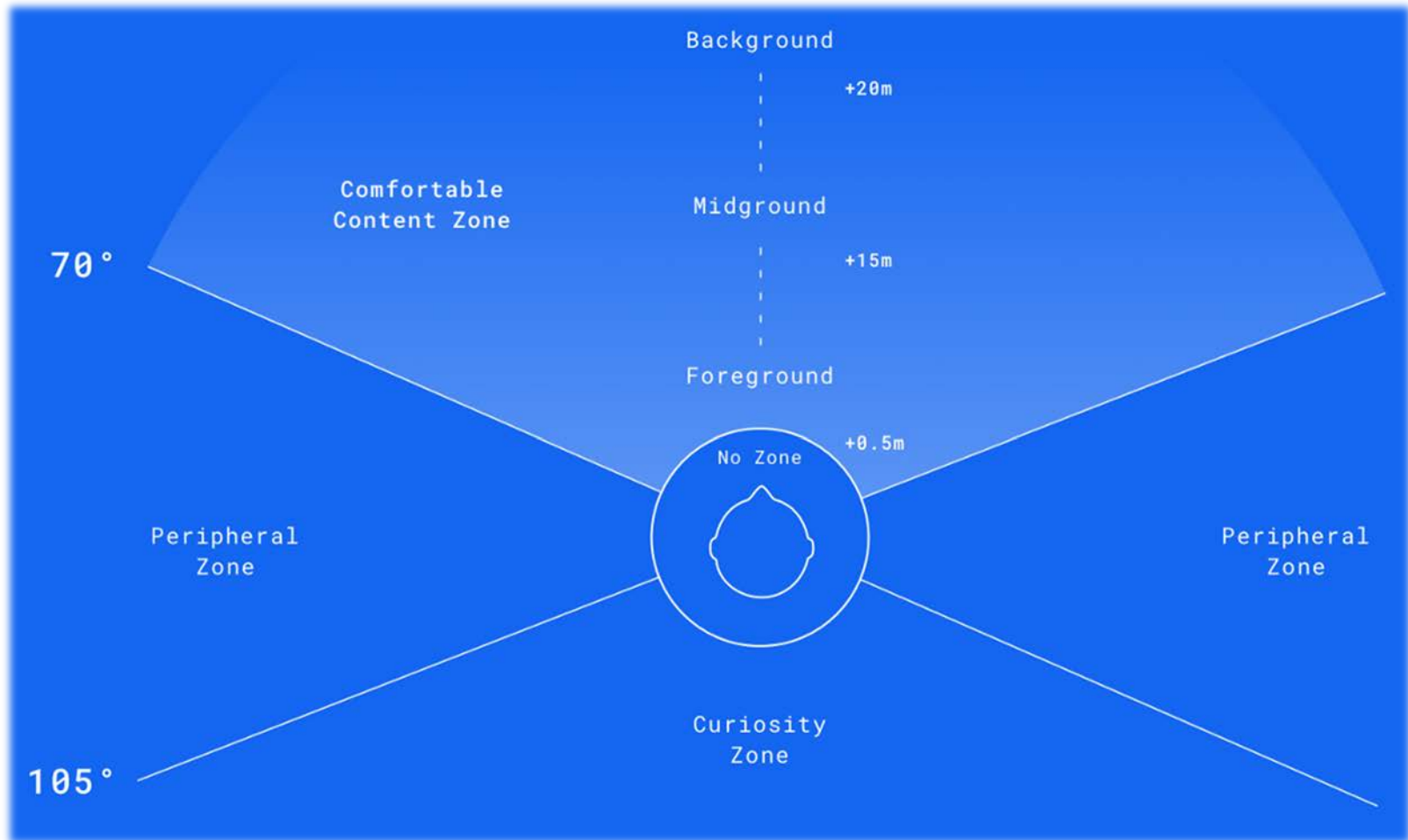
Coordinate Spaces

- Menus can be placed in different coordinate spaces:
 - World
 - Anchored in room or world coordinates
 - Easy to find
 - Possible occlusion of other objects in the world
 - Hand
 - Attached to a hand/controller
 - Travels with user
 - View
 - Attached to head/viewing space
 - Can be uncomfortable to always move with head
 - Object
 - Attached to the object the menu applies to
 - Intuitive association of menu and affected object

Comfortable Range of Motion



Viewing Zones

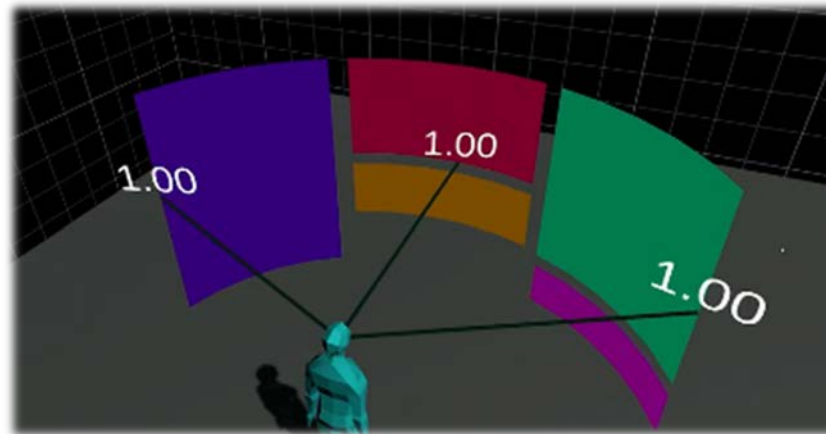


UI Design Considerations



- From Learn.Unity unit 6.2:
 - <https://learn.unity.com/tutorial/unit-6-best-ui-practices-for-vr?uv=2018.4#5d969338edbc2a2d9fcf7792>

User Comfort



- From Learn.Unity unit 6.3:
 - <https://learn.unity.com/tutorial/unit-6-best-ui-practices-for-vr?uv=2018.4#5d969339edbc2a5ecf787577>

More Information

- Unity specific implementation tips:
 - <https://learn.unity.com/tutorial/unit-6-best-ui-practices-for-vr?uv=2018.4#5d96933bedbc2a6084598933>
- <https://arvrjourney.com/laundry-list-of-ux-patterns-in-vr-ar-24dae1e56c0a>
- <https://chaitanyashah.com/hand-interactions-exploration>
- [Comparing Spatial Interaction Modalities for 2D-Widgets in Productivity Applications in Virtual Reality](#)