2D & 3D UIs: What’s the Same?

- Users/tasks (sometimes)
- Design/evaluation principles (sometimes)
  - E.g., high-level heuristics
    http://www.useit.com/papers/heuristic/heuristic_list.html
- Displays/devices (sometimes)
  - “Desktop” / “laptop” / “palmtop” 3D UIs using classical 2D interaction devices
- Development environments (sometimes)
  - Use of “classical” textual languages / IDEs
2D & 3D UIs: What’s Different?

- Overall relative lack of maturity/standardization
  - But, this is changing: WebGL (http://www.khronos.org/webgl/), X3D (www.web3d.org), AR standards efforts (http://arstandards.org)
- Users/tasks
- Sensory modalities
  - More than just sight and sound
- Interaction techniques
  - Perceiving, selecting, manipulating, navigating in 3D
- Displays/devices
  - Stereo, 6DOF head/body-tracked, wearable, vision-based,…
- Evaluation criteria
  - Realism, presence, immersion, simulator-induced sickness (cybersickness)
- Development environments
  - Design of 3D assets and interaction

(Revisiting) Ten Usability Heuristics  J. Nielsen
http://www.useit.com/papers/heuristic/heuristic_list.html

- Visibility of system status
- Match between system and the real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help users recognize, diagnose, and recover from errors
- Help and documentation