

Sketchy Thoughts

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History of sketching systems



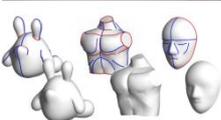
Sketchpad [Sutherland 1963]



SKETCH [Zelevnik et al 1996]



Teddy [Igarashi et al 1999]



Fibermesh [Nealen et al 2007]



ILoveSketch [Bae et al 2008]

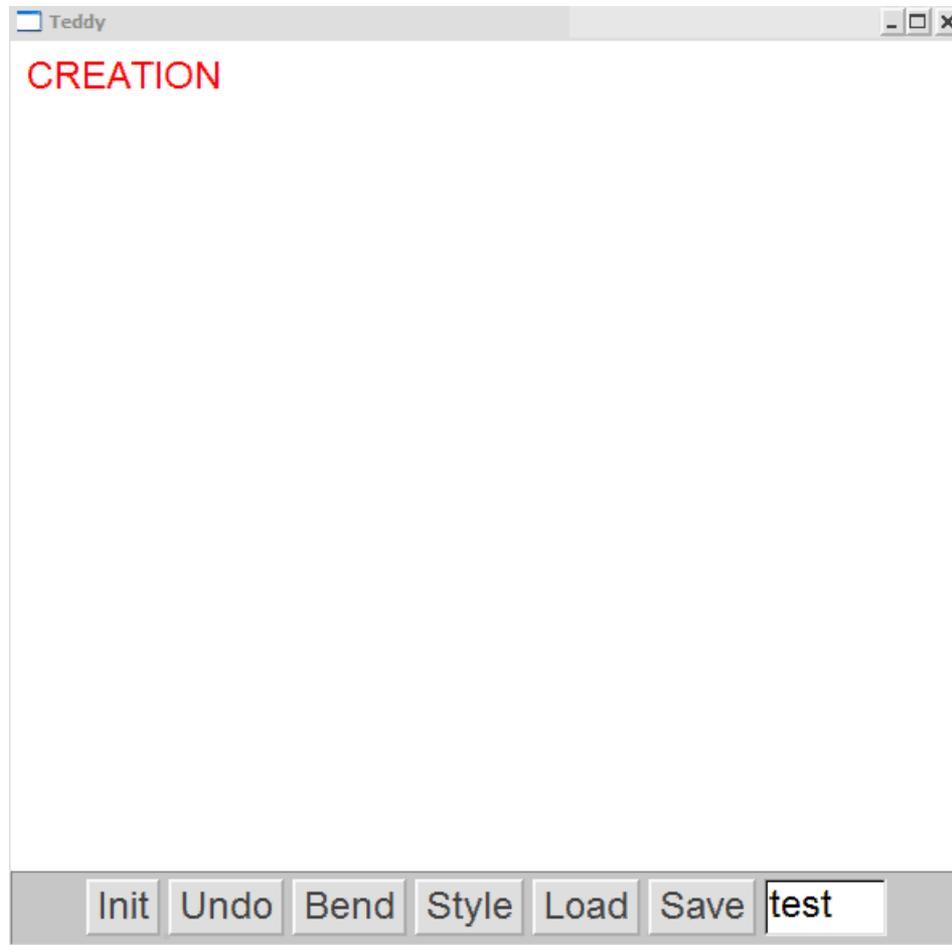


Analytic 3D drawing [Schmidt et al 2009]

3D Digital sketching & sculpting is hard!

- 2D input (mouse, pen tablet, multi-touch, pressure, tilt, speed...) to define 3D.
- Inferring 3D shape from 2D input is often ambiguous.
- 3D input (phantom, mocap) have poorer fidelity, haptics and ergonomics compared to 2D input.
- 3D shape is viewed on a 2D display (volumetric and stereo displays have poorer fidelity).
- Perceptual bias in 2D views of 3D shape.

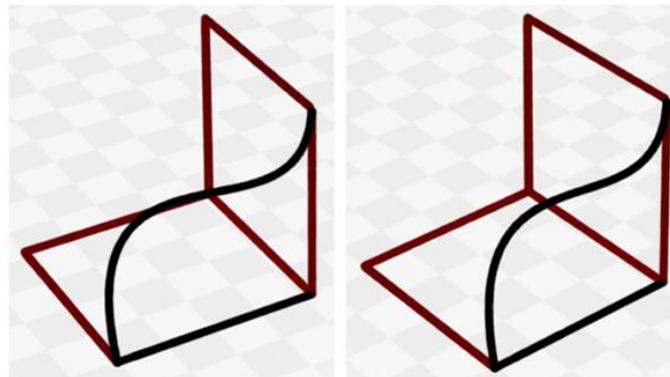
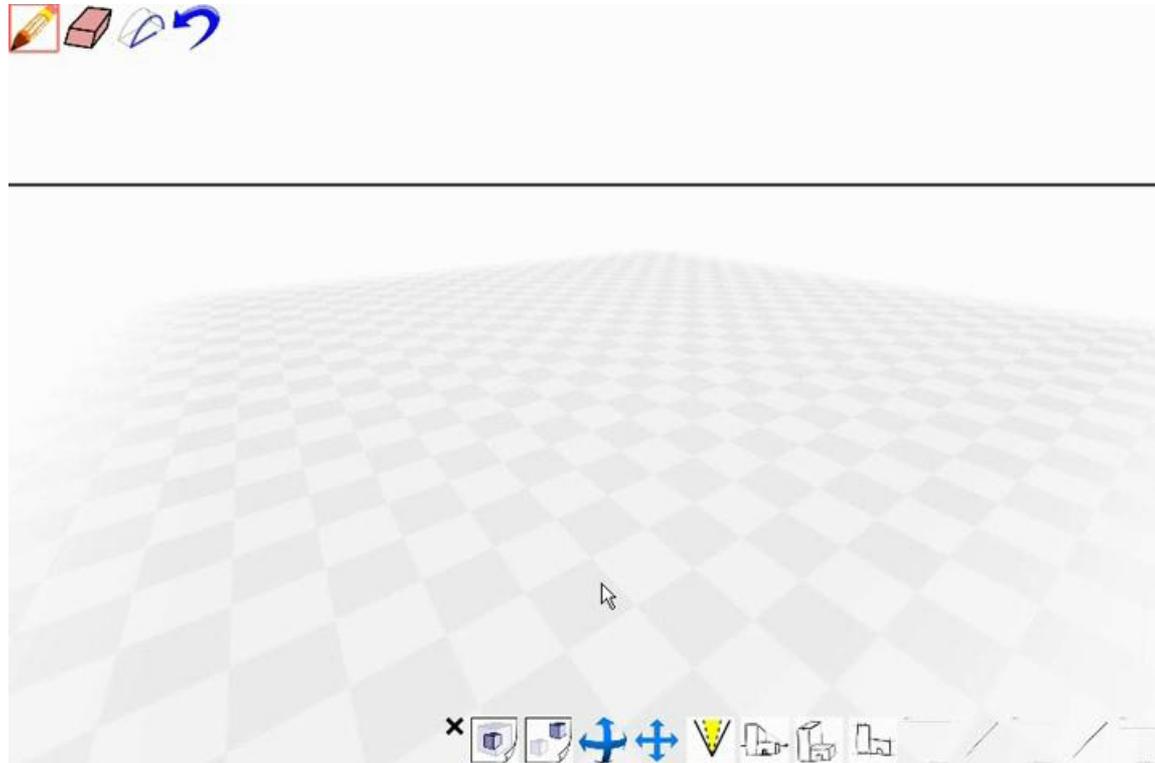
2D to 3D: Teddy



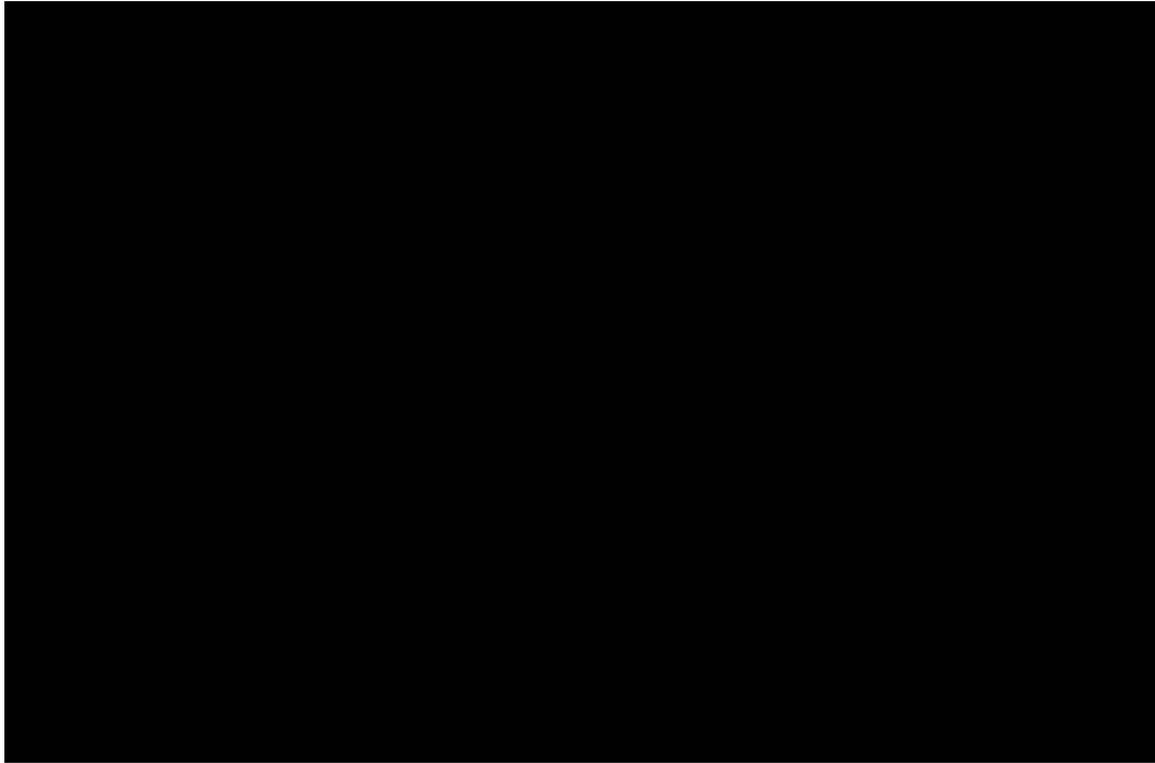
Multi-view vs. Single-view sketching



Multi-view vs. Single-view sketching



Mixing Metaphors



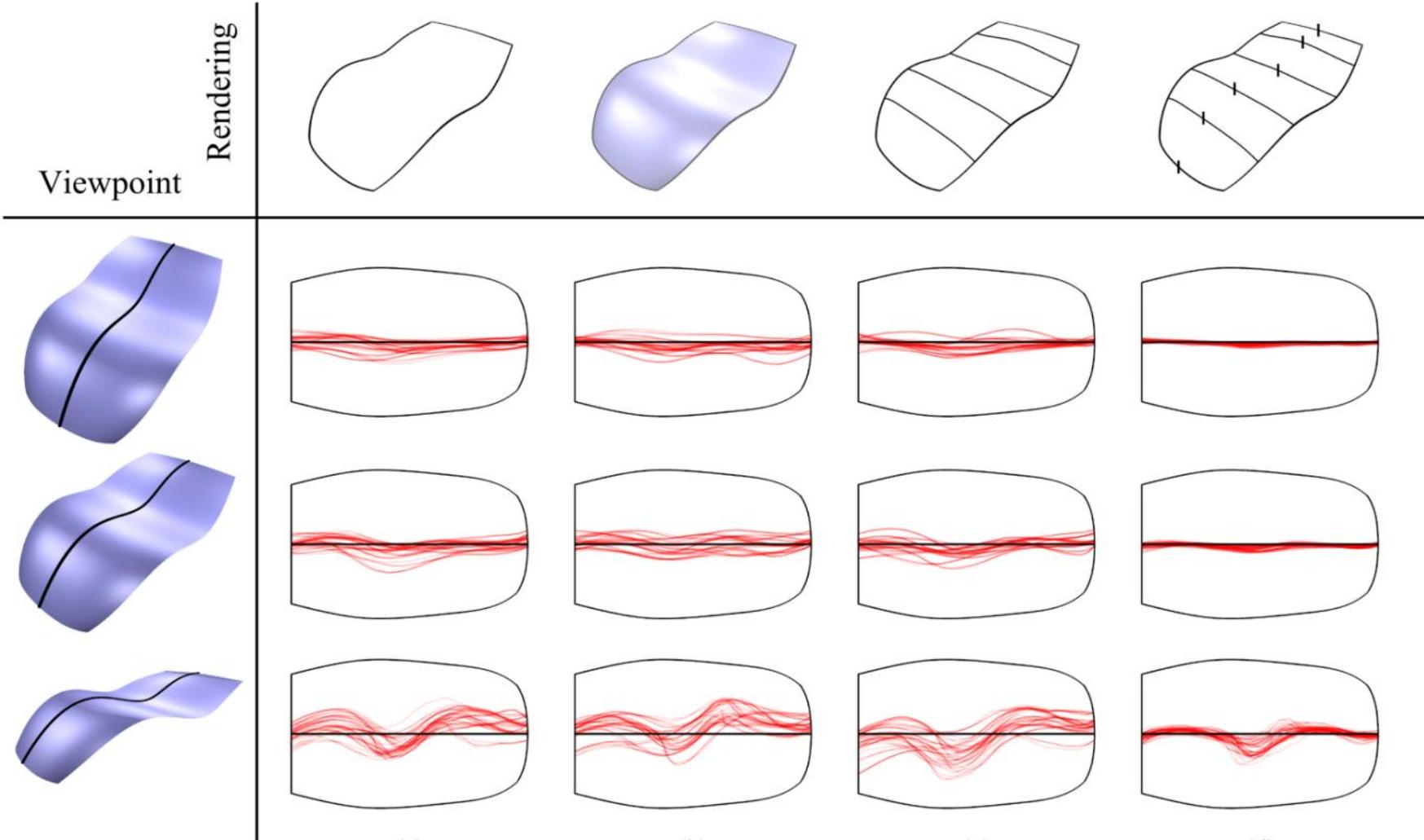
Sketching & sculpting evaluation

- Must build a complete system to be useful in a creative setting.
- Creativity of the interface can be hard to quantify.
- Comparative workflows/benchmarks across systems are hard to define.
- Unbiased users across multiple systems are hard to find.
- Proprietary issues with creative content.

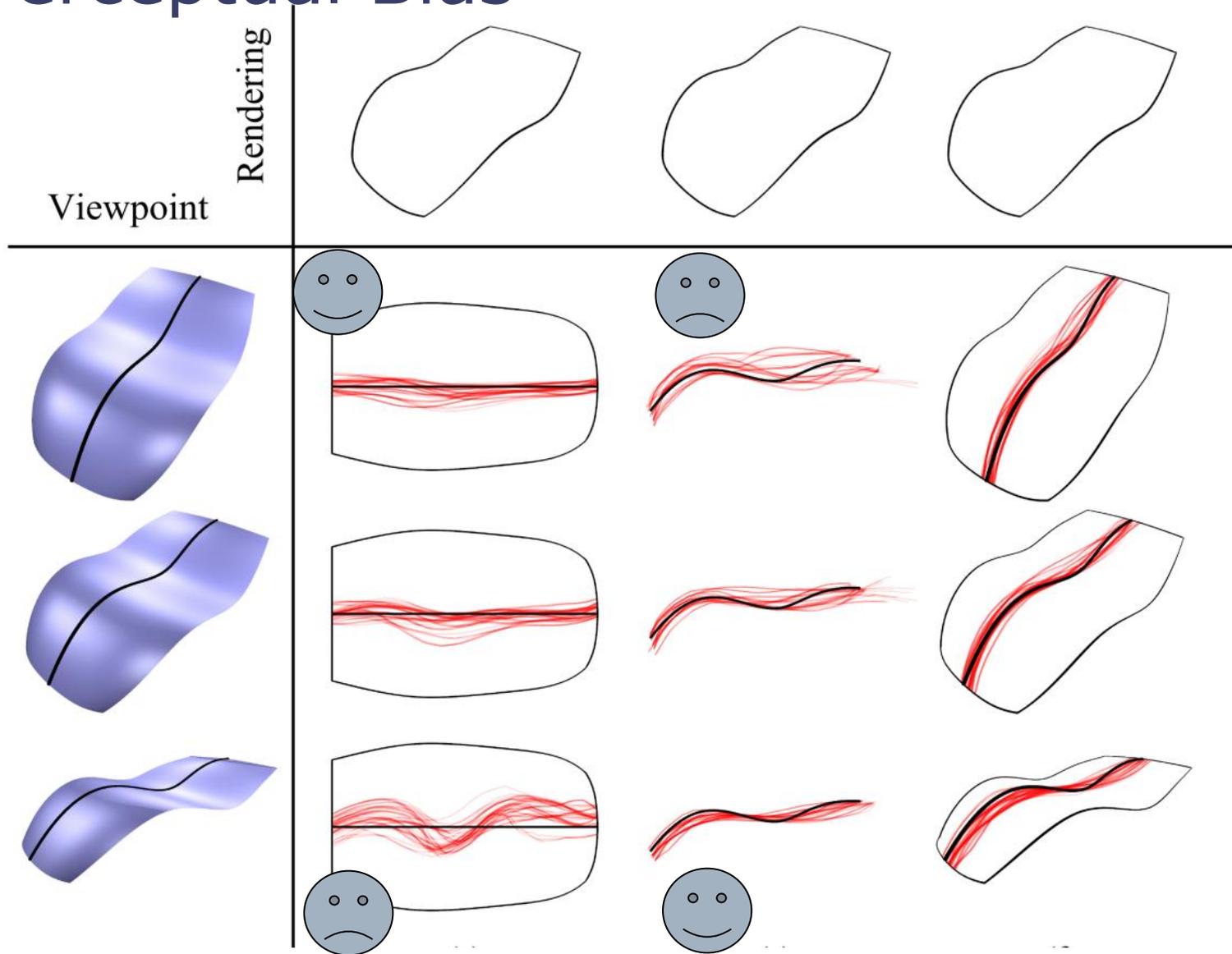
Possible solutions:

classrooms, iterate with experts, evaluate in the wild, forums, anecdotal.

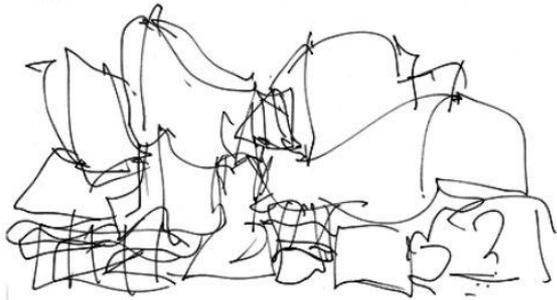
Perceptual Bias



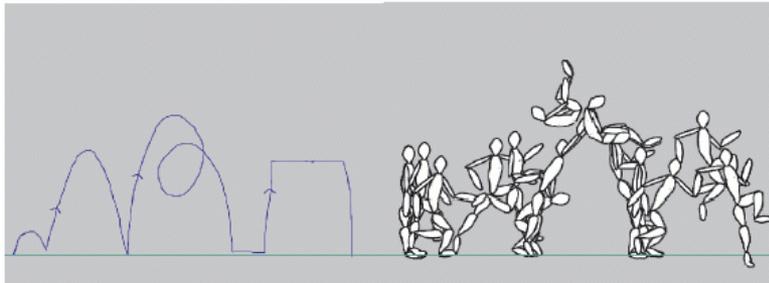
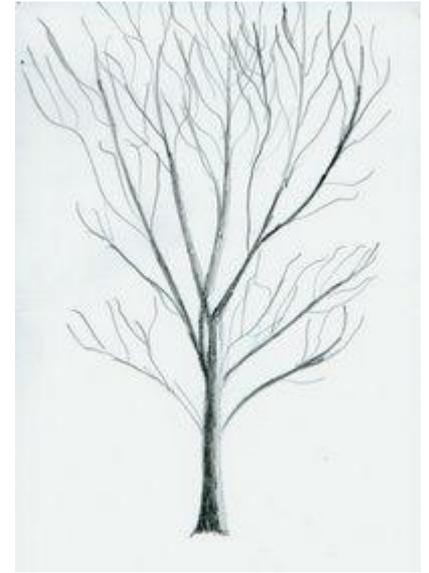
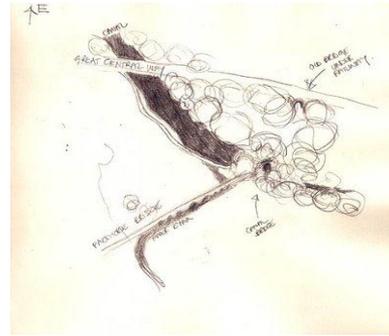
Perceptual Bias



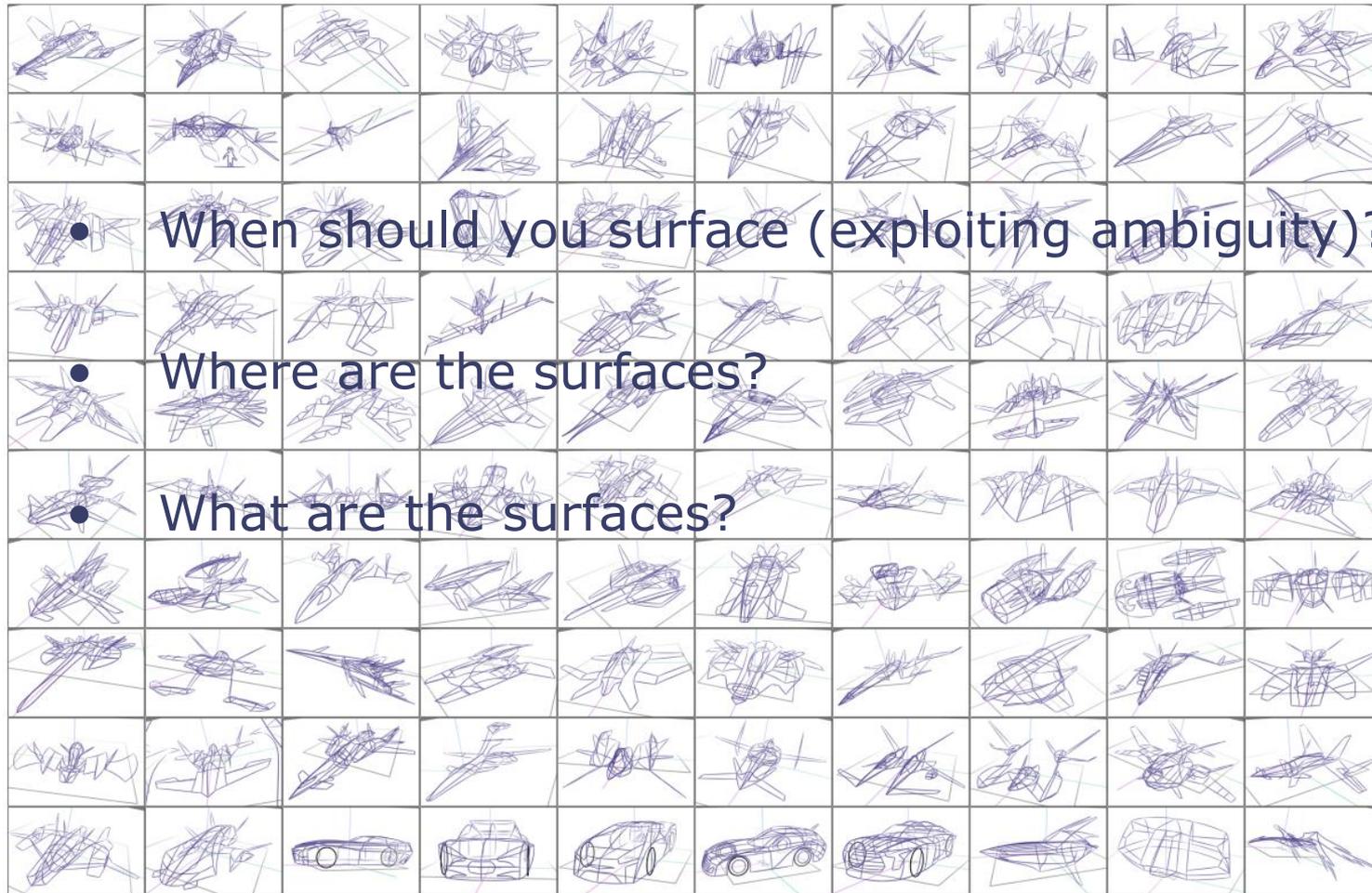
Sketch domains



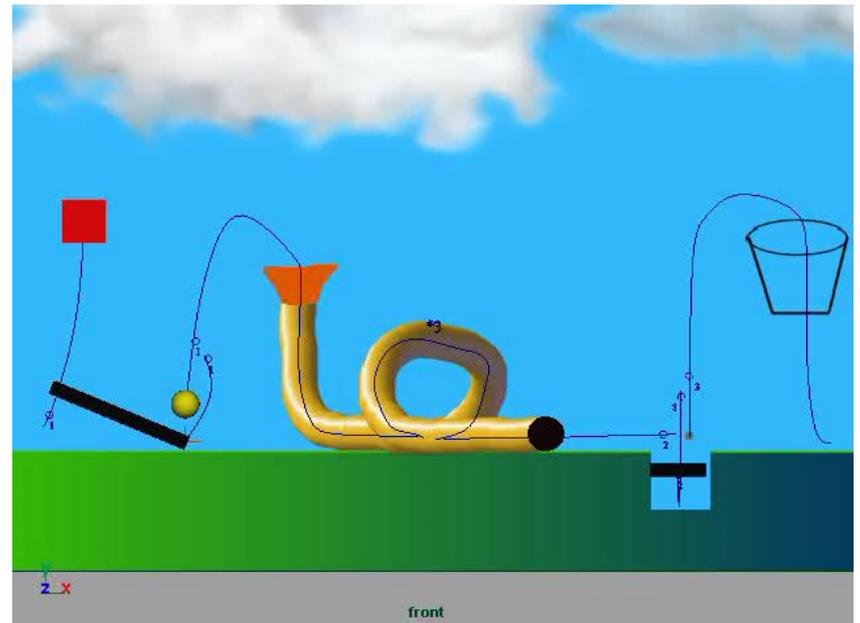
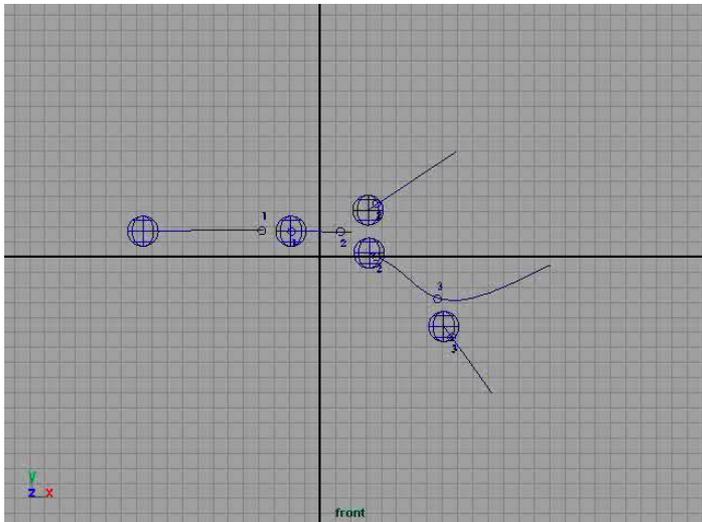
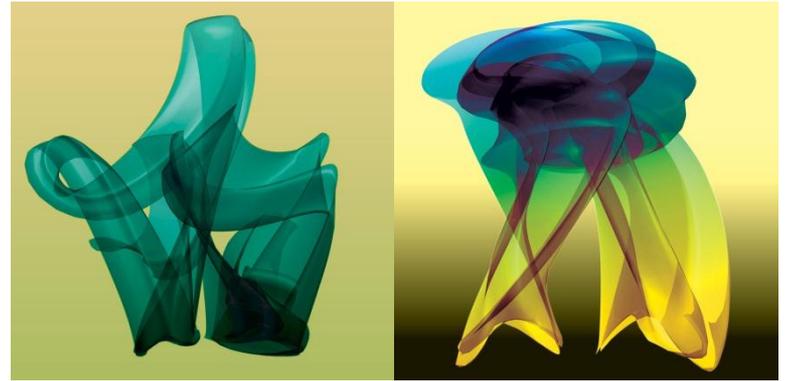
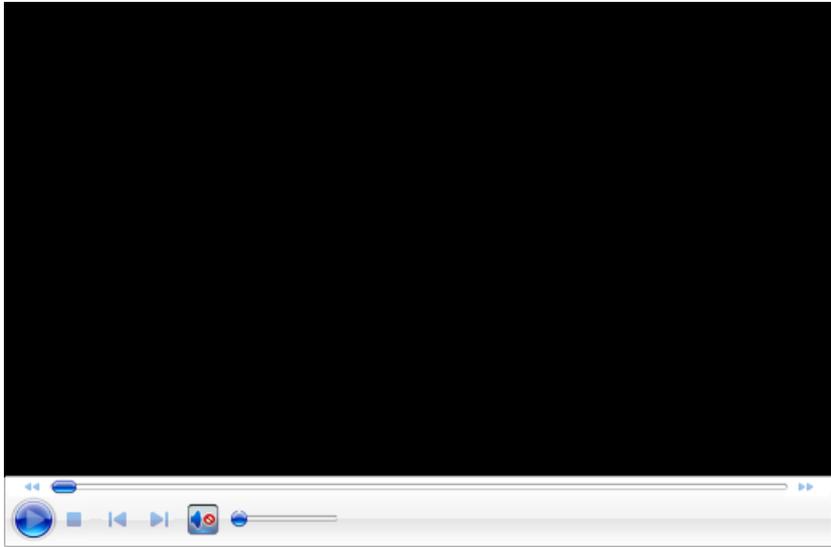
Family Group and Midland



Sketching for modeling



Sketching for animation



Sketching for animation

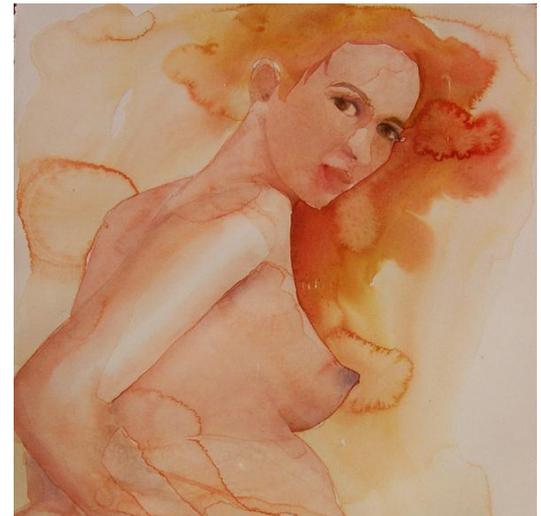
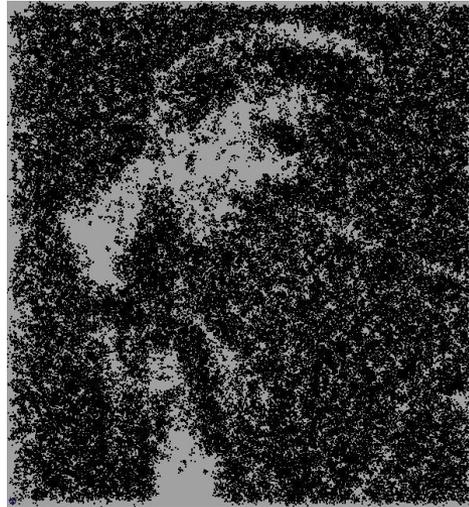
- Motion trails or fronts are not always sparse.
- 3D motion trails can be too abstract to conceptualize.
- 3D motion trails can be too 3 dimensional to specify.

Projects

- Physically-based/animated sketching.
- Artistic sketching of video.
- Facial modeling and animation (multi-touch).
- Flipbooks: sketching for animation.
- Drawing scenery, landscapes, urbanscapes (architecture).
- Production Drawing.
- Anatomic annotation.
- Perception of line drawings (Where is the surface in a line drawing?).
- Ergonomics of sketching curves (Given two points and directions how do we connect them?).
- Sketching for audio-interactive visualization.
- Sketching non-linear projections.
- Sketching across 3D canvases.
- A taxonomy of sketch interfaces.
- Sketch UI.
- Sketch interactive art installation.

Projects

- Physically-based/animated sketching.



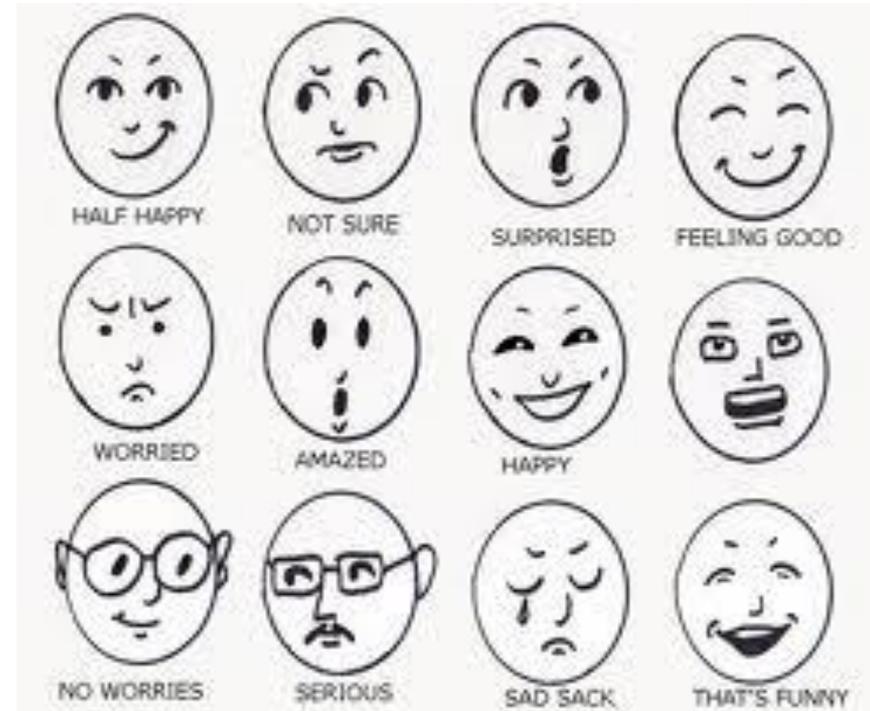
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Projects

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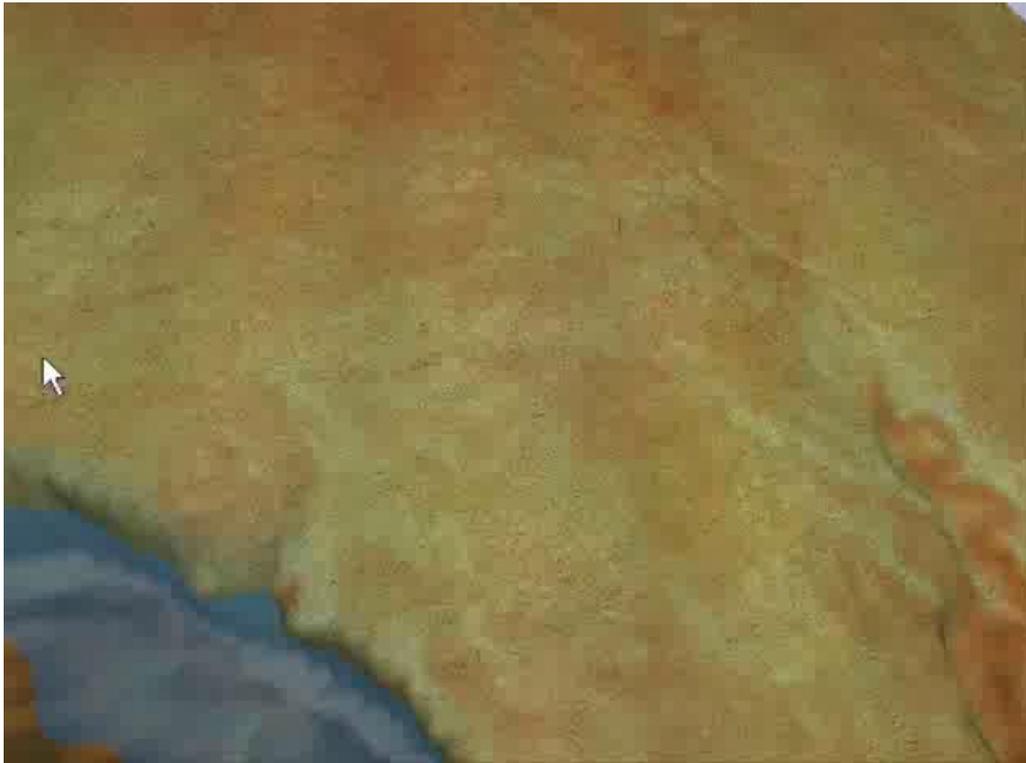


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Projects

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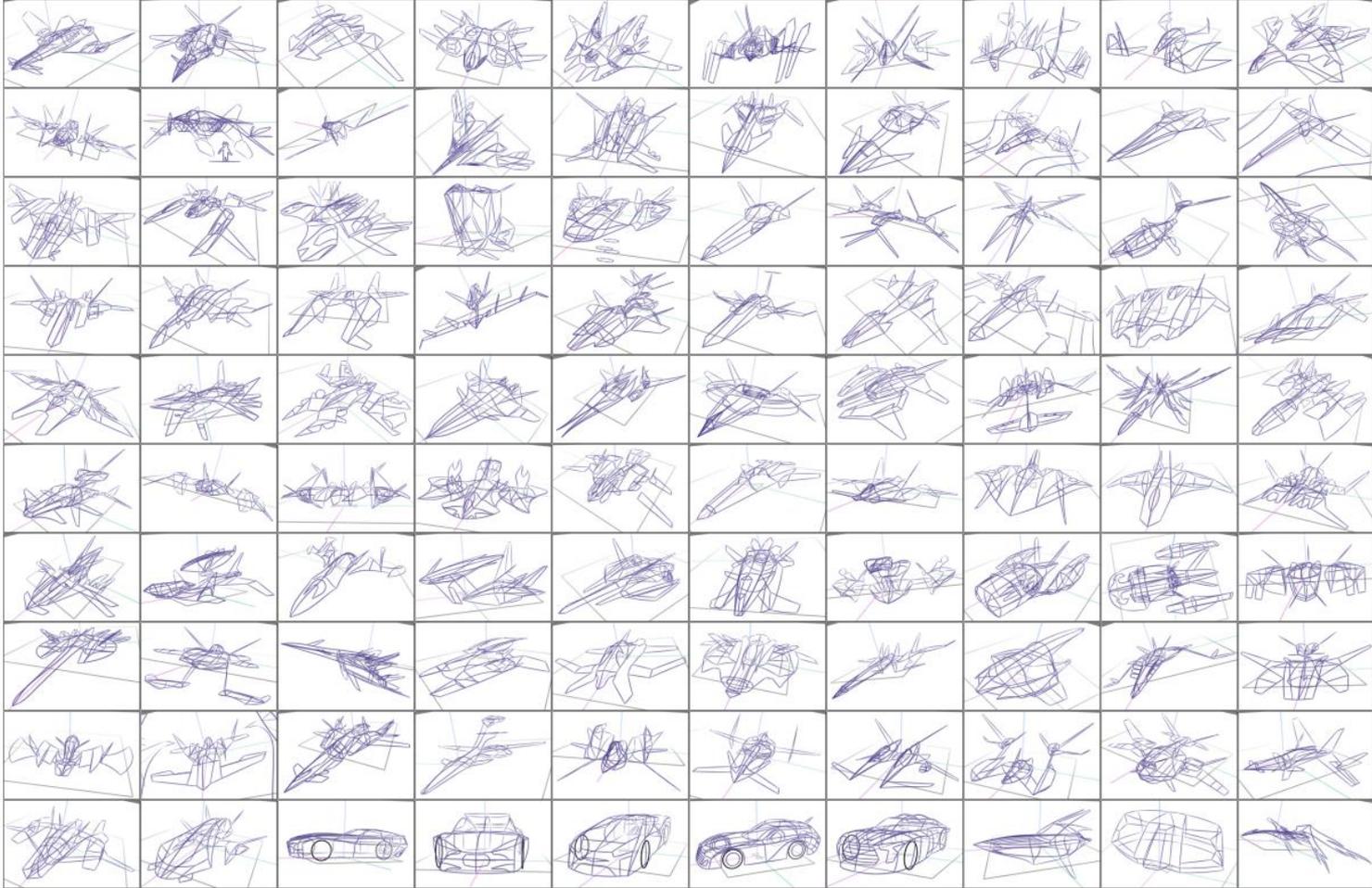
Projects

- Production Drawing.



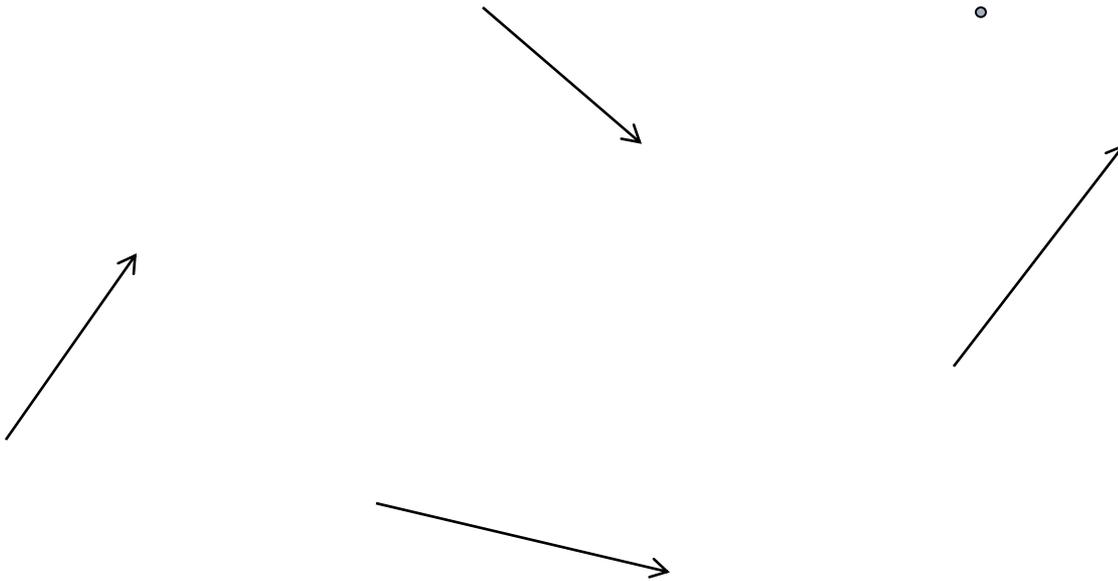
Projects

- Perception of line drawings (Where is the surface in a line drawing?).



Projects

- Ergonomics of sketching curves (Given points and directions how do we connect them?).



Projects

- Sketching audio.



Projects

- Sketching nonlinear projections.



Projects

- Sketching across 3D canvases.

