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Motion and Layout Depiction Using 2D/3D Animation Tools

Melvin Even, Jean Basset, Pierre Bénard, Pascal Barla

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Motion and Layout Depiction Using 2D/3D Animation Tools

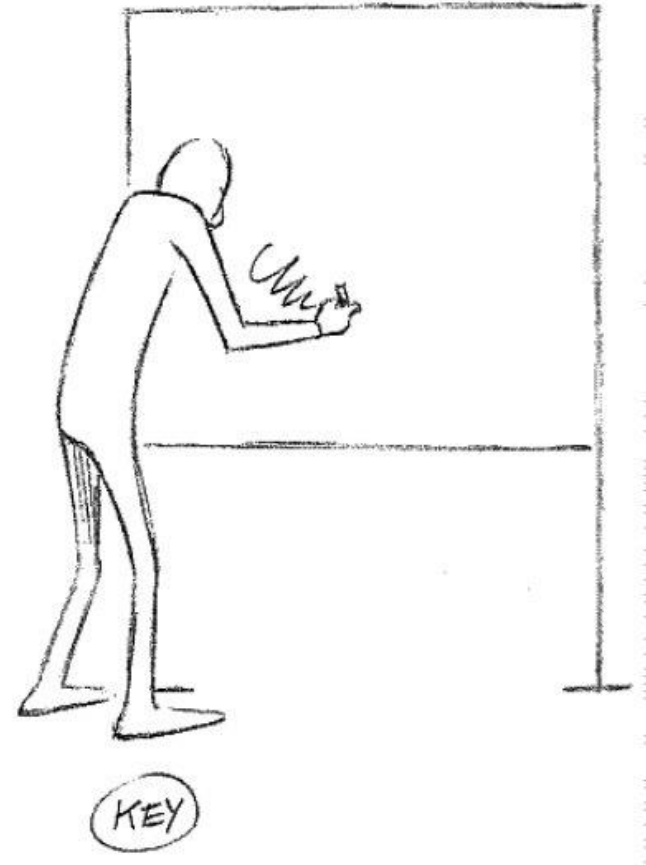
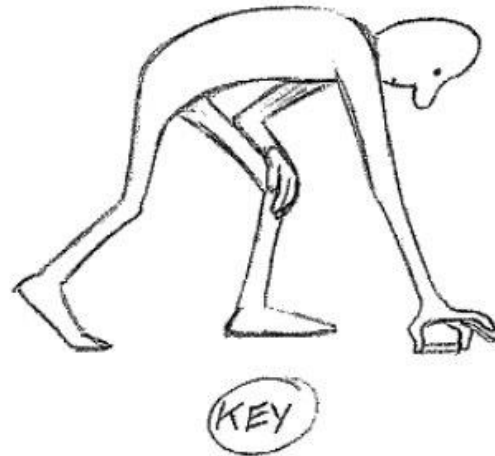
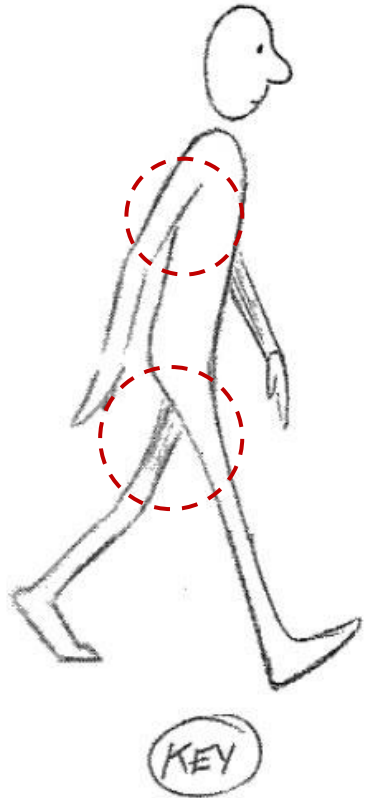
Melvin Even, Jean Basset, Pierre Bénard, Pascal Barla

Inria

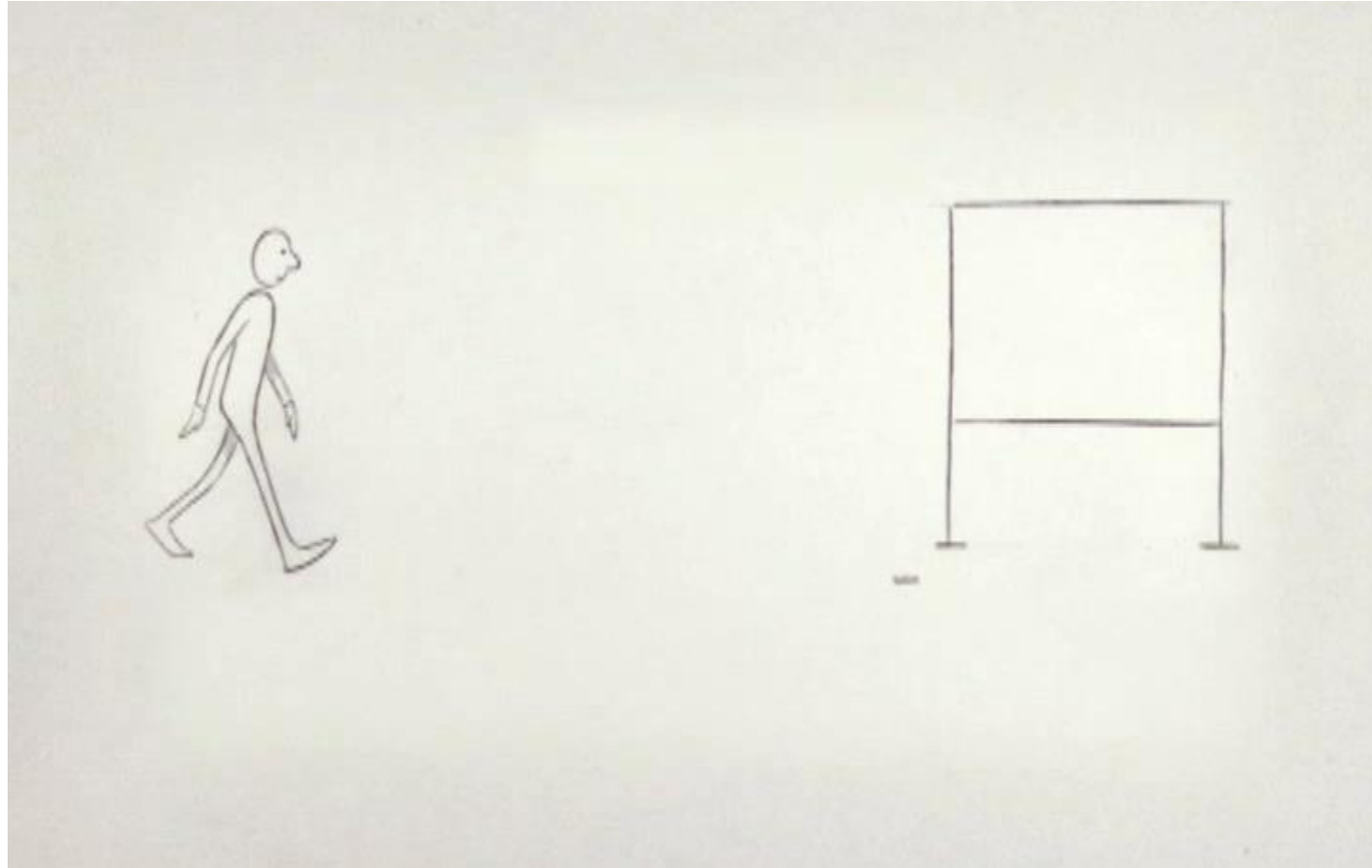
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Motion depiction



Motion depiction



Motion exaggeration



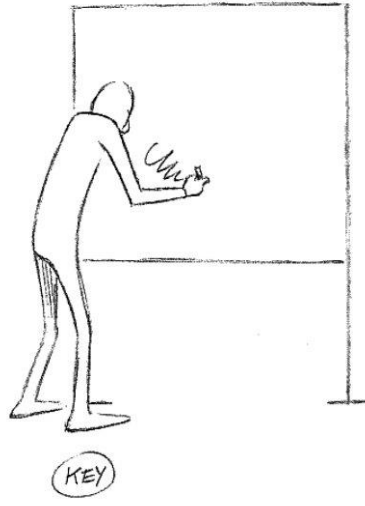
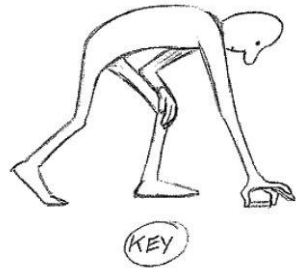
Charles M. Jones, *The Dover Boys at Pimento Academy* (1942)



Robert McKimson, *The Up-Standing Sitter* (1948)

Grim Natwick, *Well Oiled* (1947)

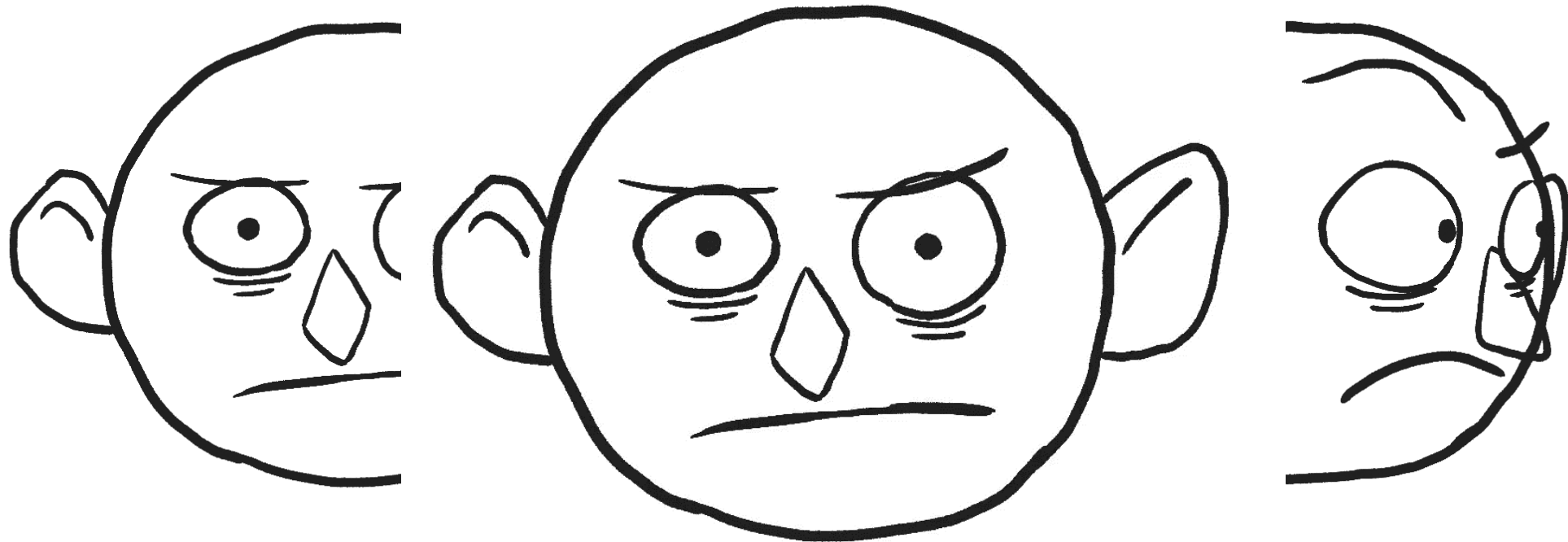
Motion depiction



Motion exaggeration

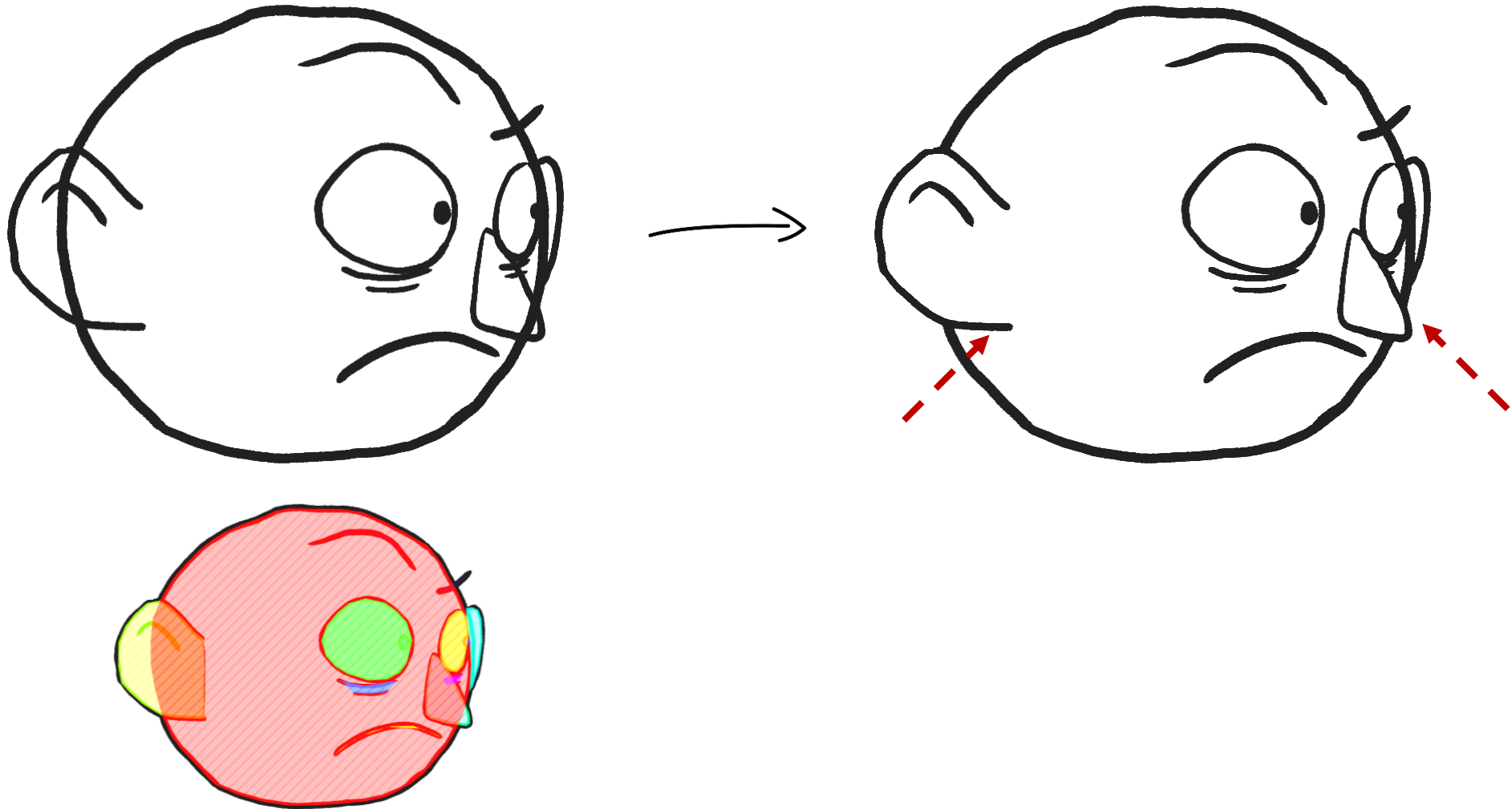


Motion previsualization

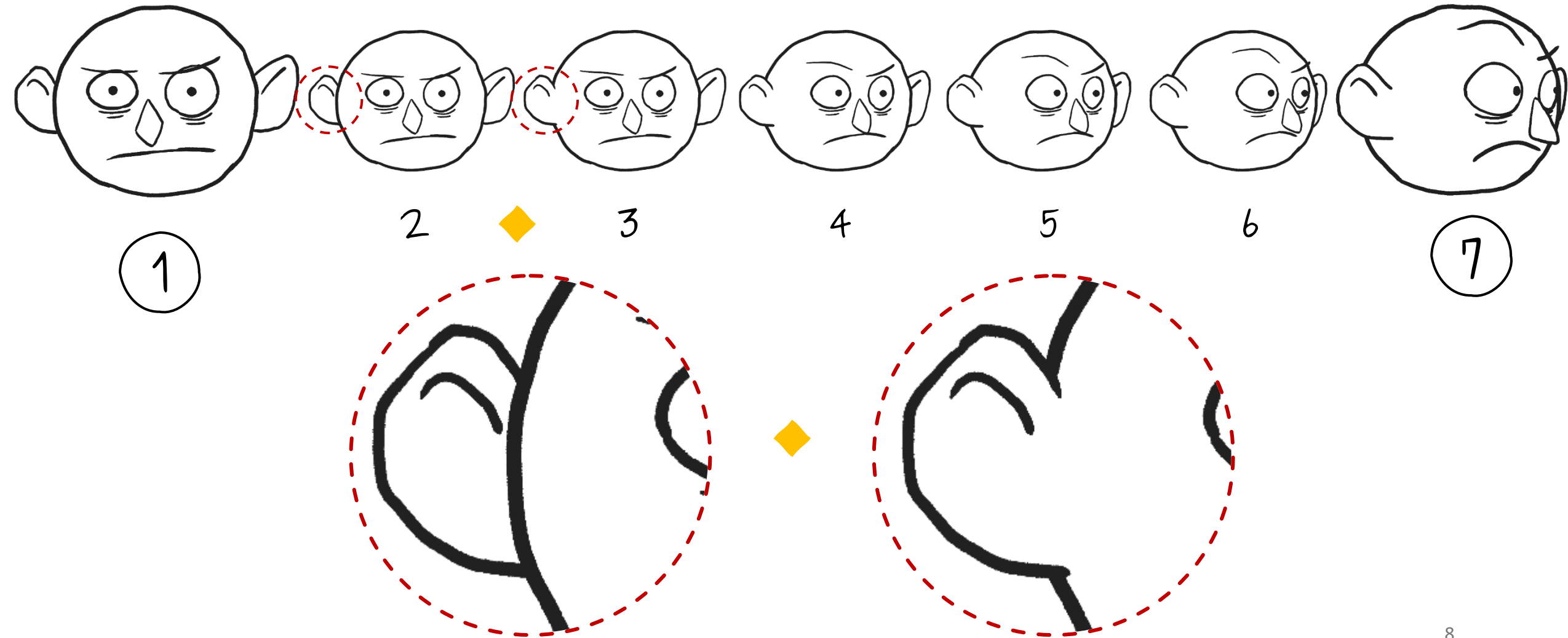


Animation inspired by *Łukasz Rusinek*

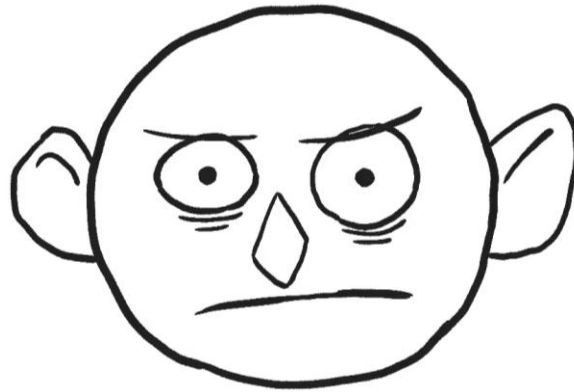
Depth layout at keyframes



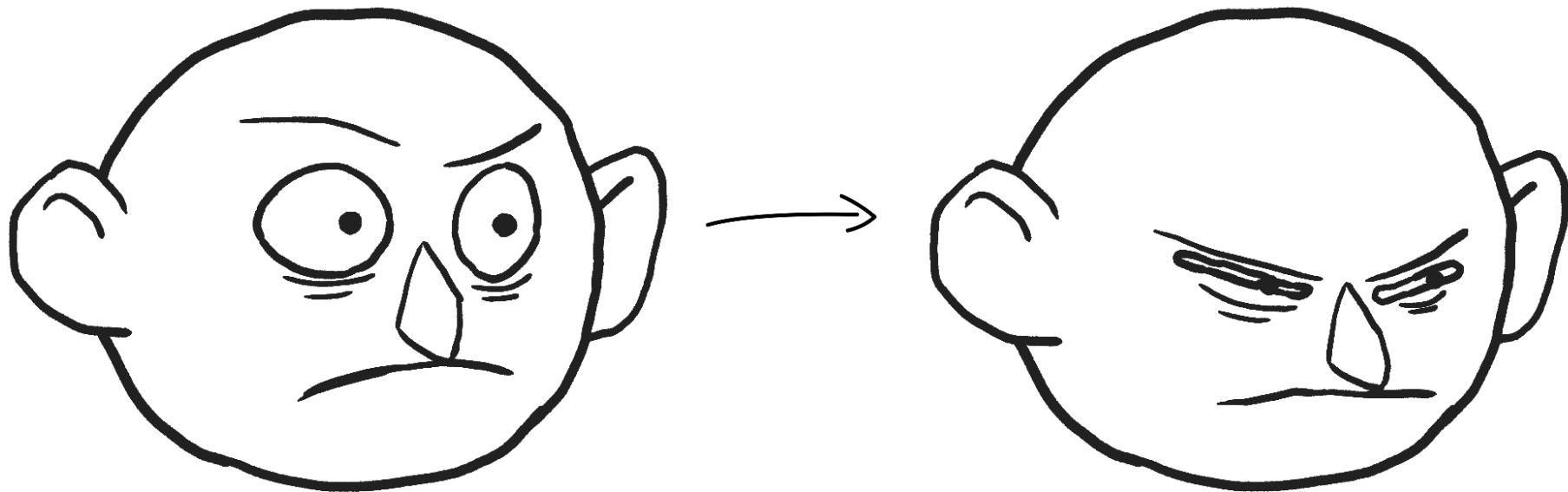
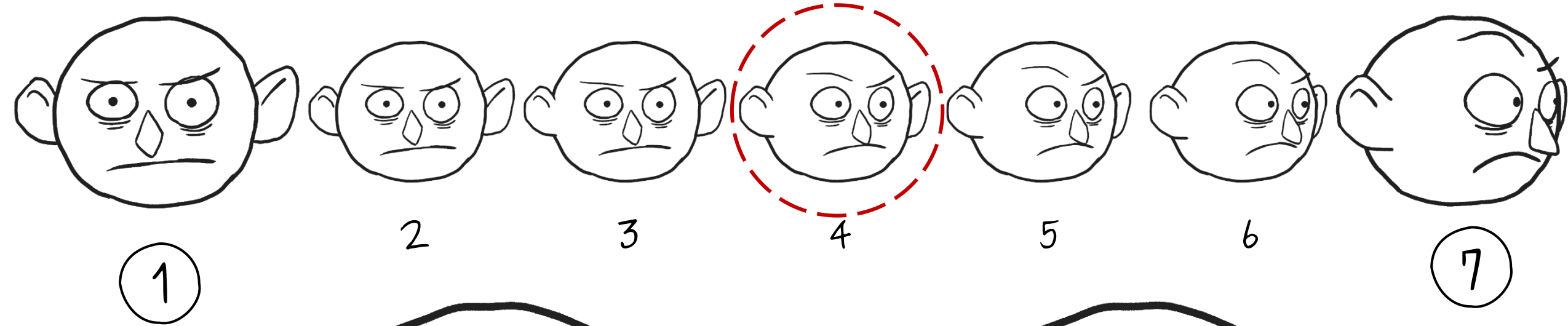
Dynamic layout



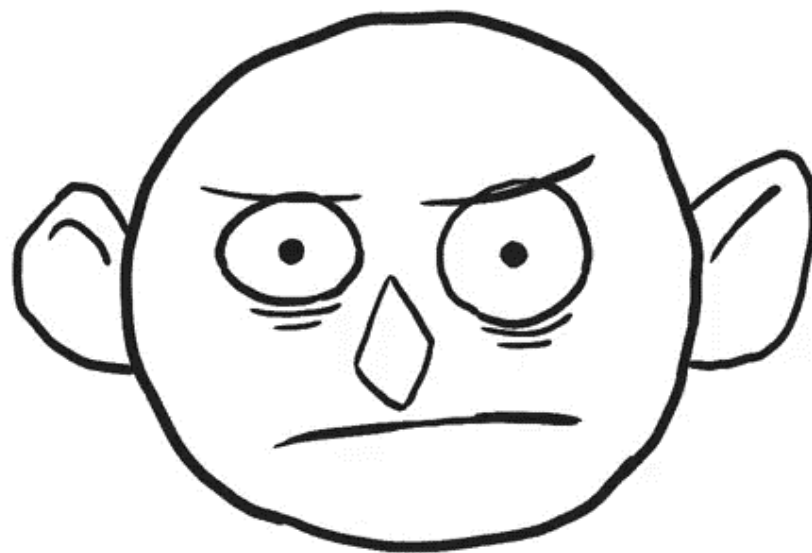
Dynamic layout



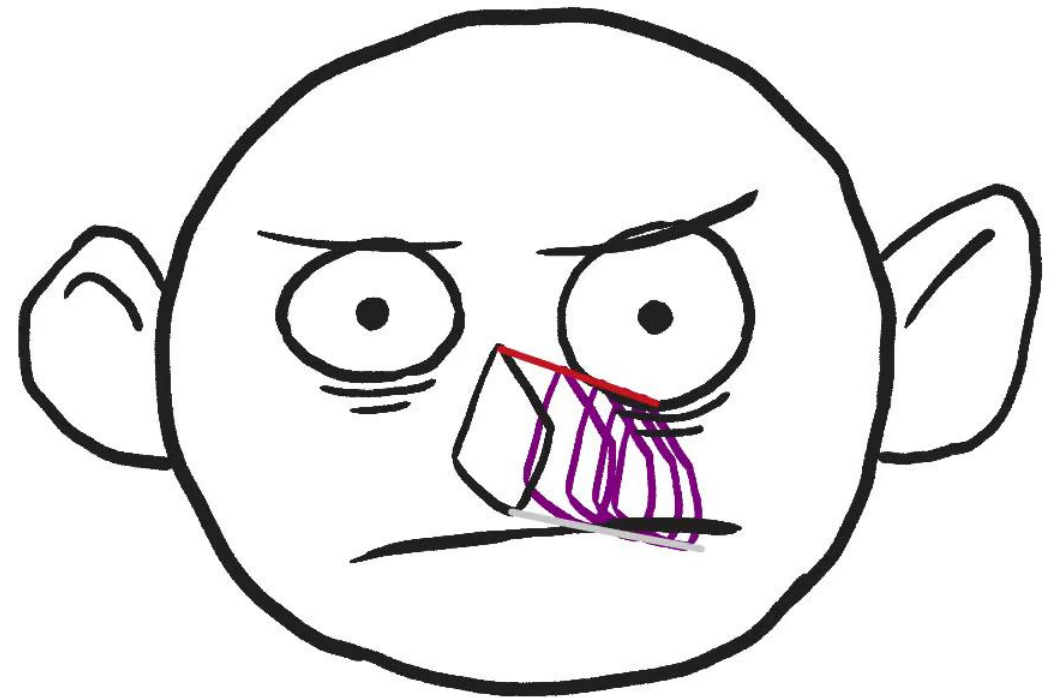
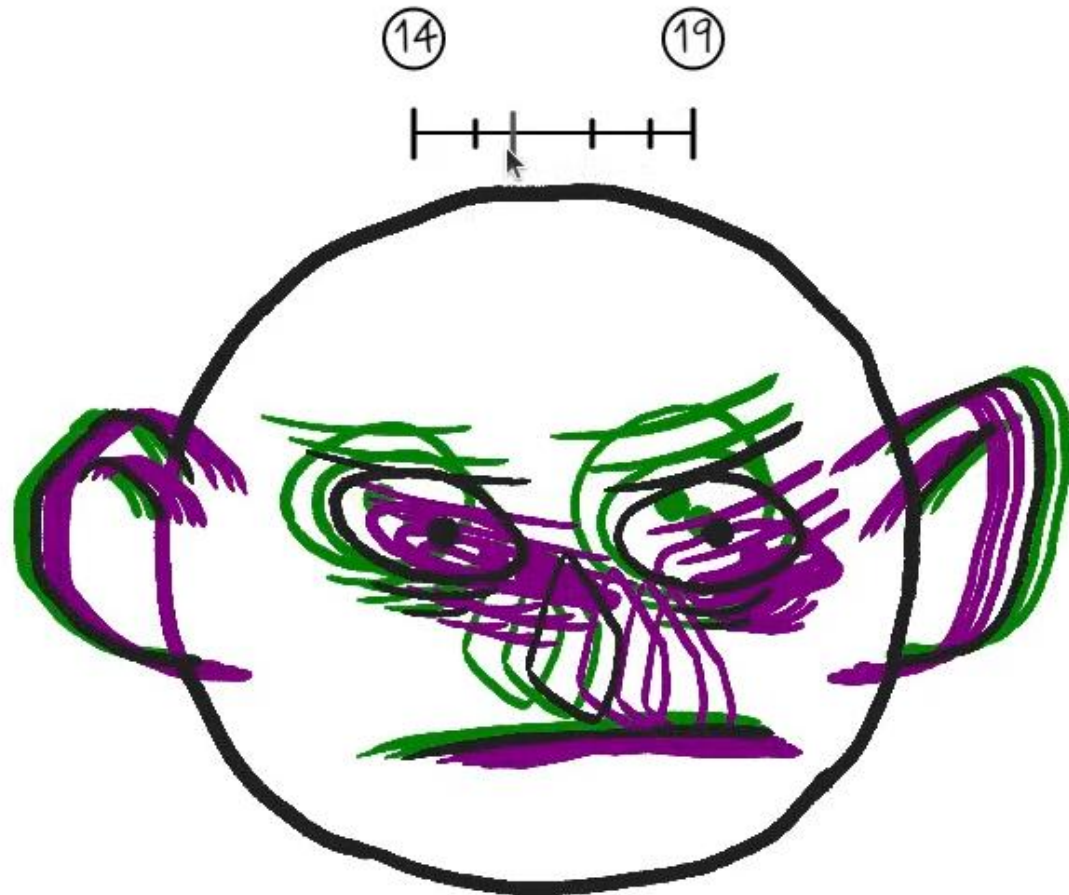
Adding breakdowns



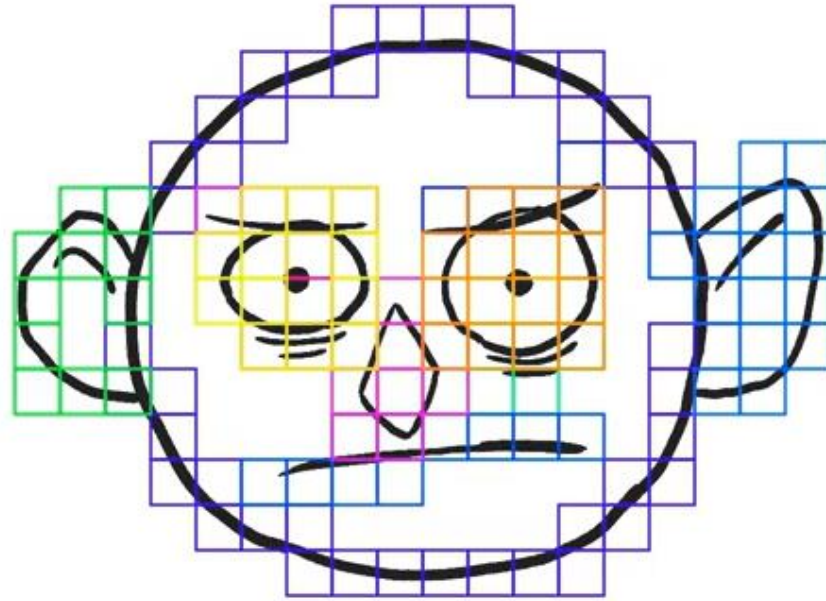
Adding breakdowns



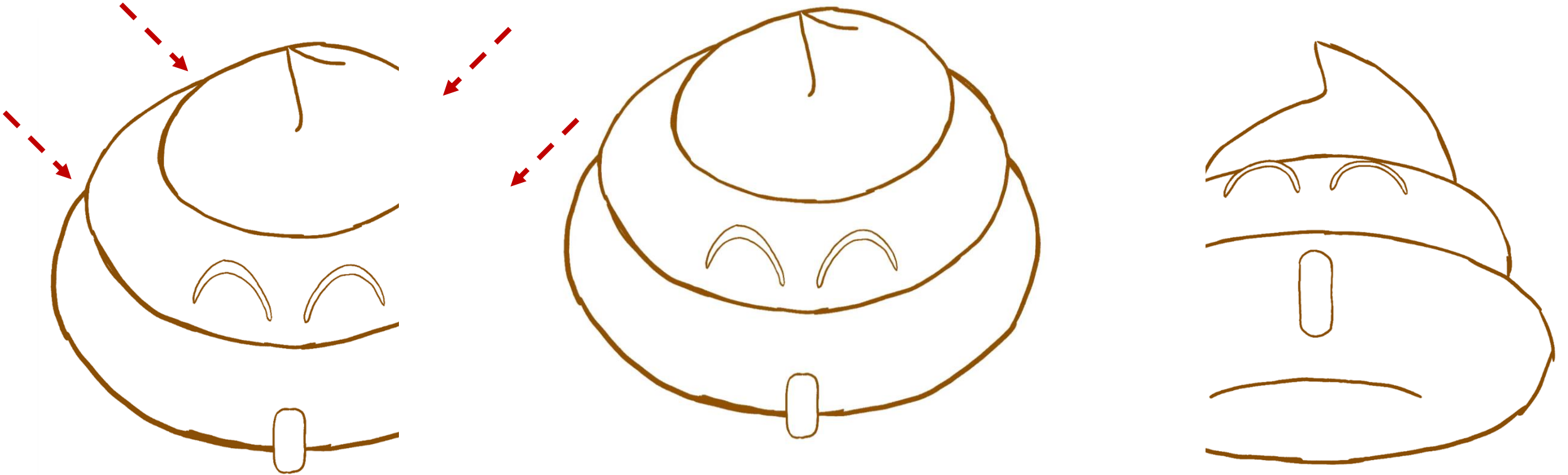
Editing the dynamics



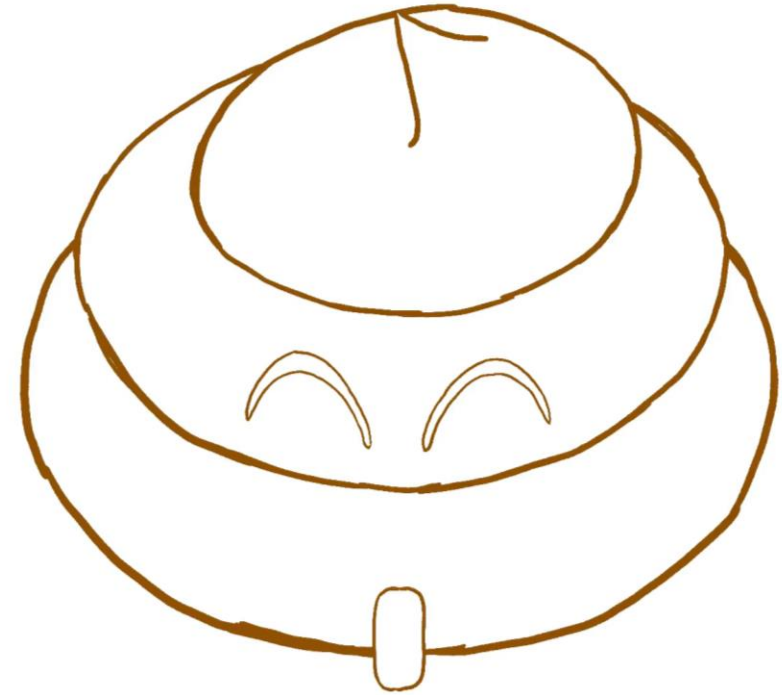
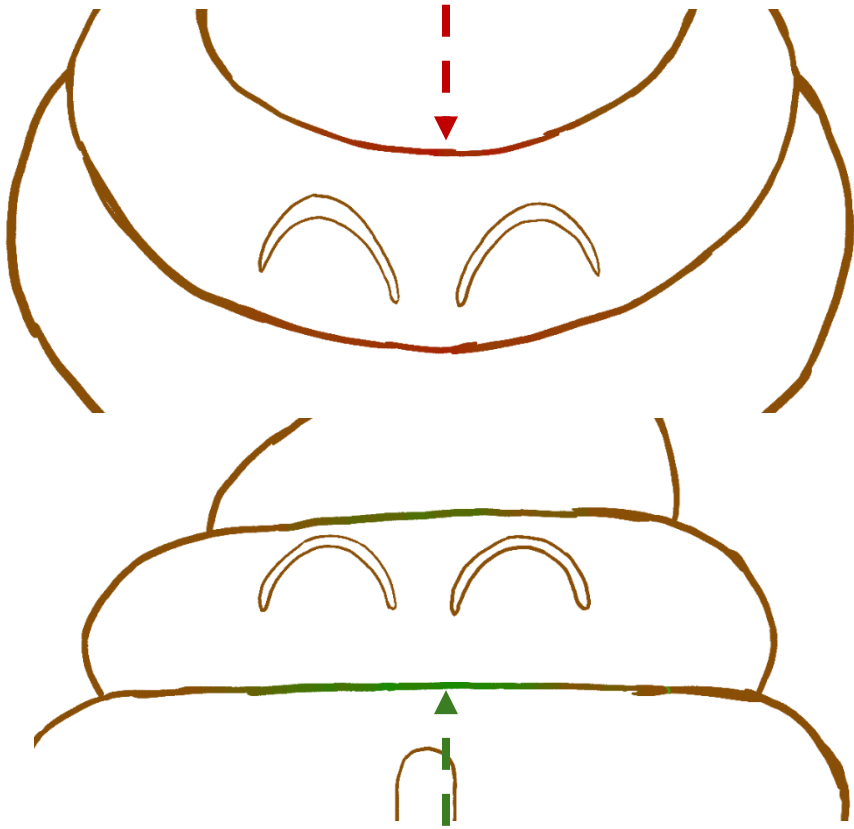
Under the hood: grids



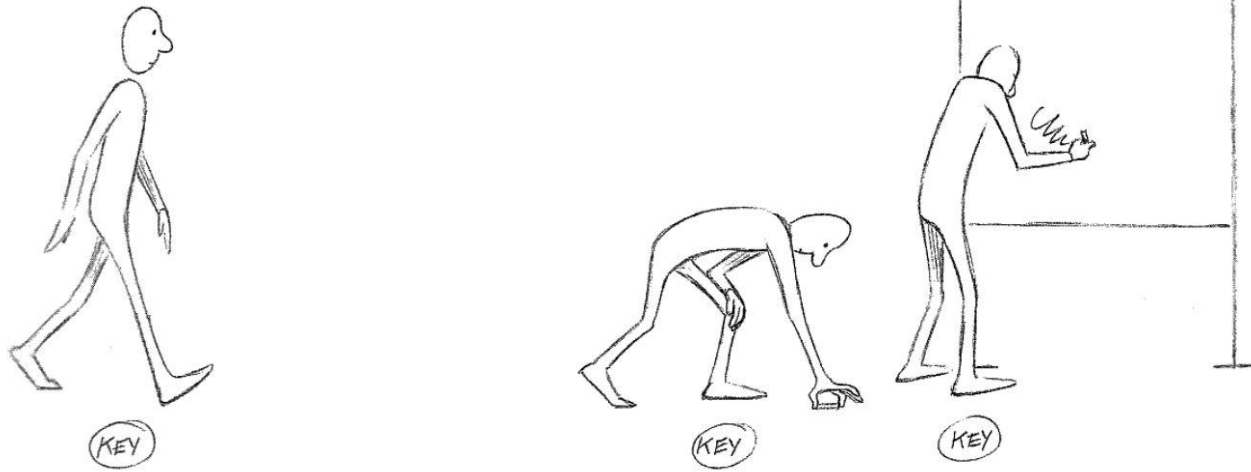
Sliding junctions



Contour visibility



Motion depiction



Motion exaggeration



Smear frames

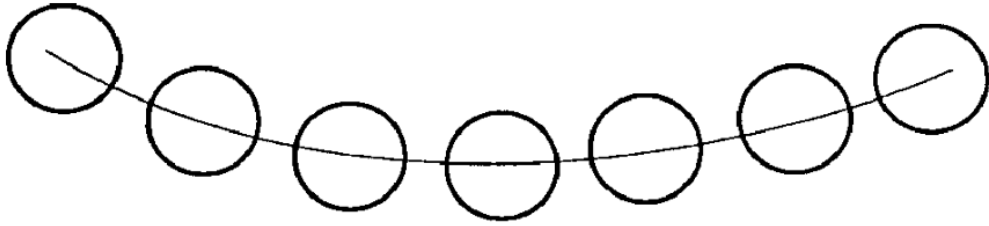


FIGURE 4b. Strobing occurs in a faster action when the object's positions do not overlap and the eye perceives separate images.

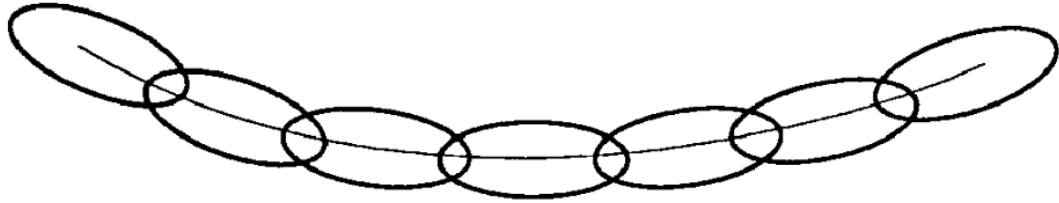


FIGURE 4c. Stretching the object so that its positions overlap again will relieve the strobing effect.

John Lasseter, *Principles of Traditional Animation Applied to 3D Computer Animation* (1987)

Smear frames

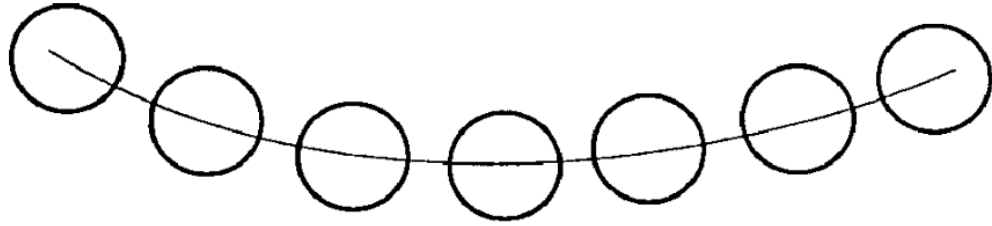


FIGURE 4b. Strobing occurs in a faster action when the object's positions do not overlap and the eye perceives separate images.

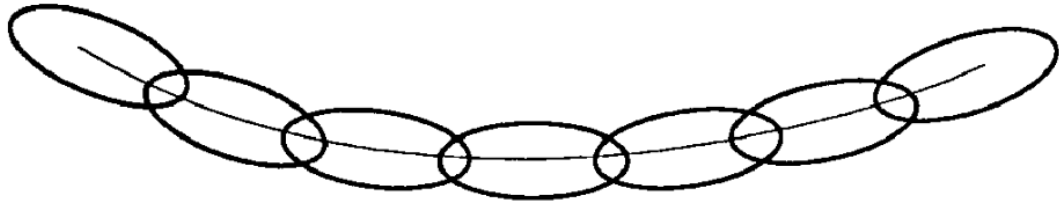
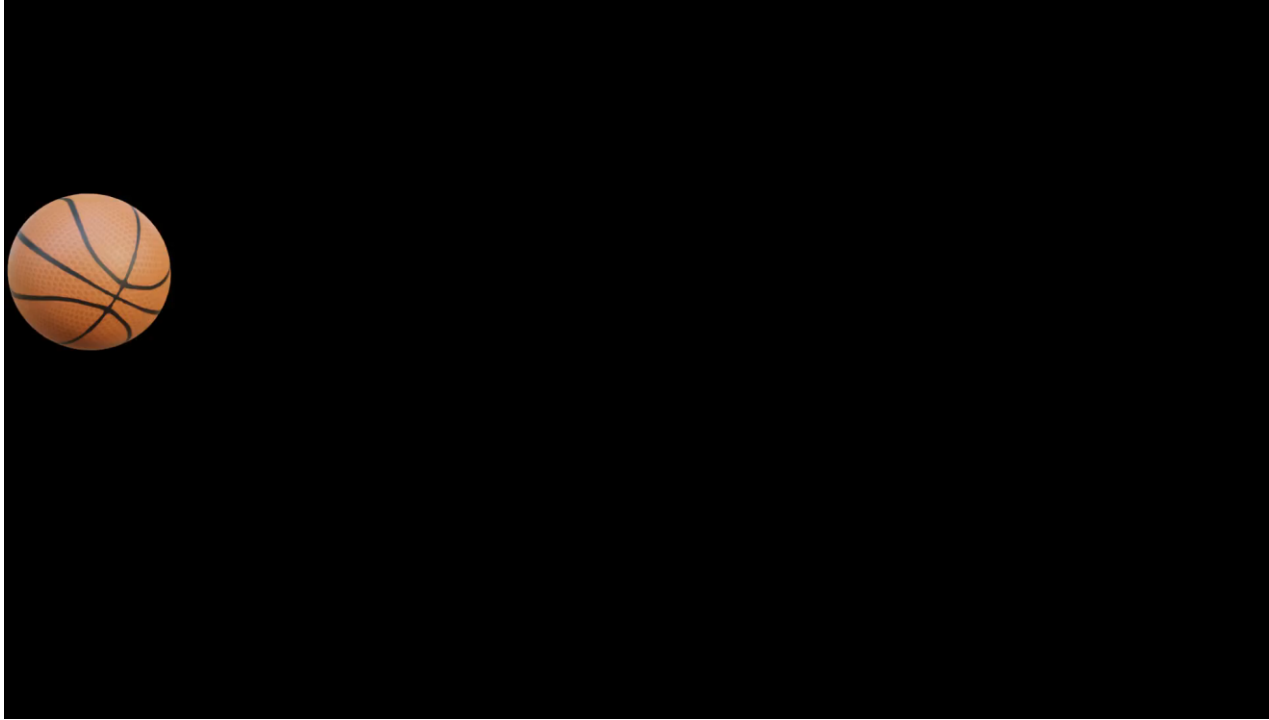


FIGURE 4c. Stretching the object so that its positions overlap again will relieve the strobing effect.



Smear frames

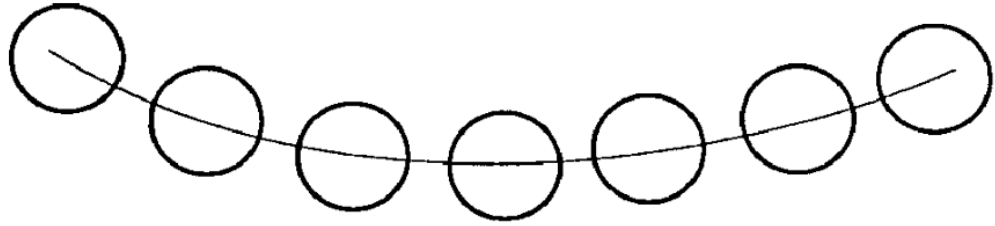


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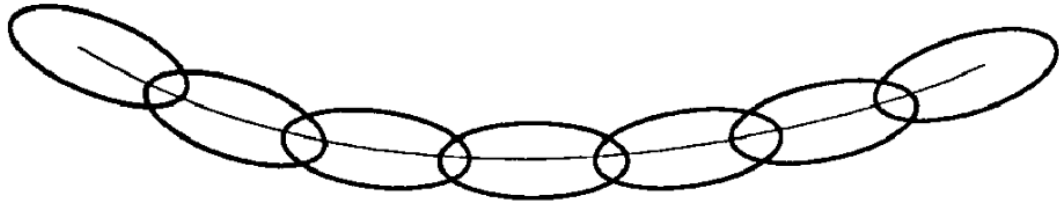
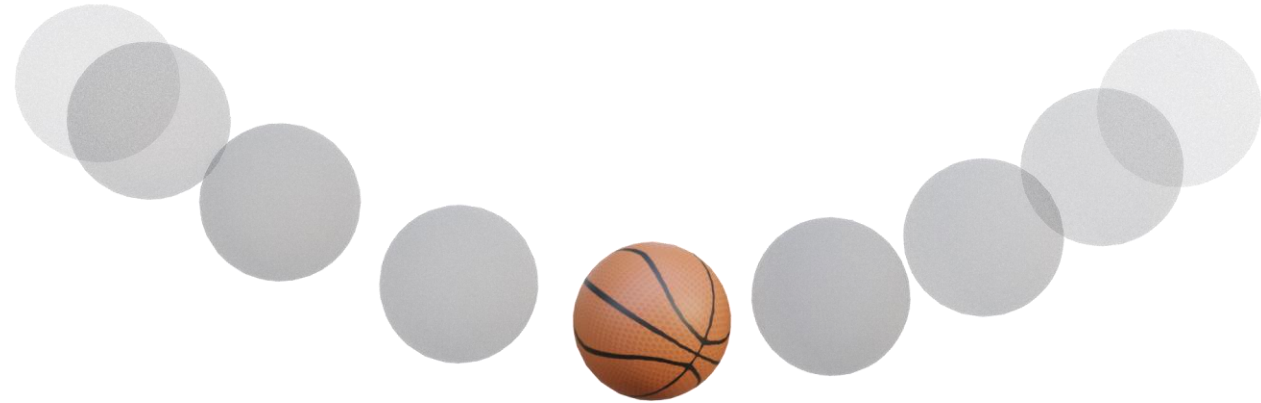


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Smear frames

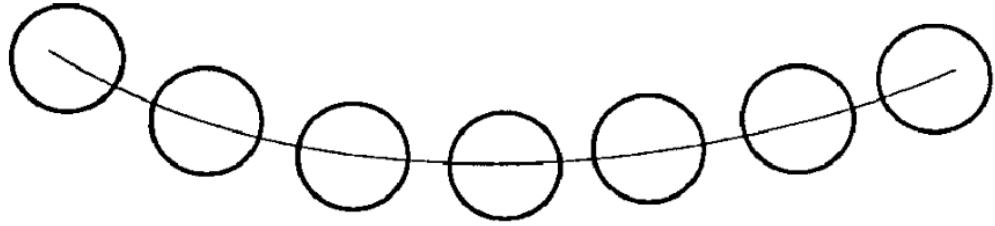


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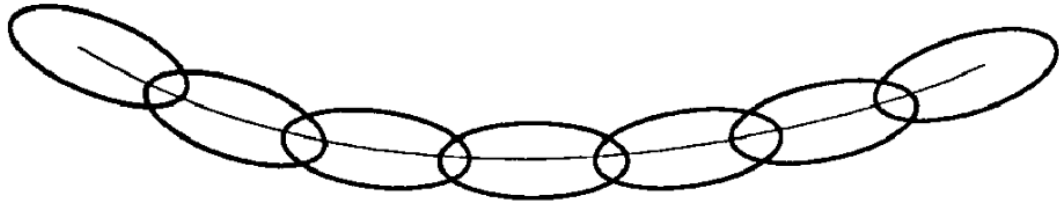
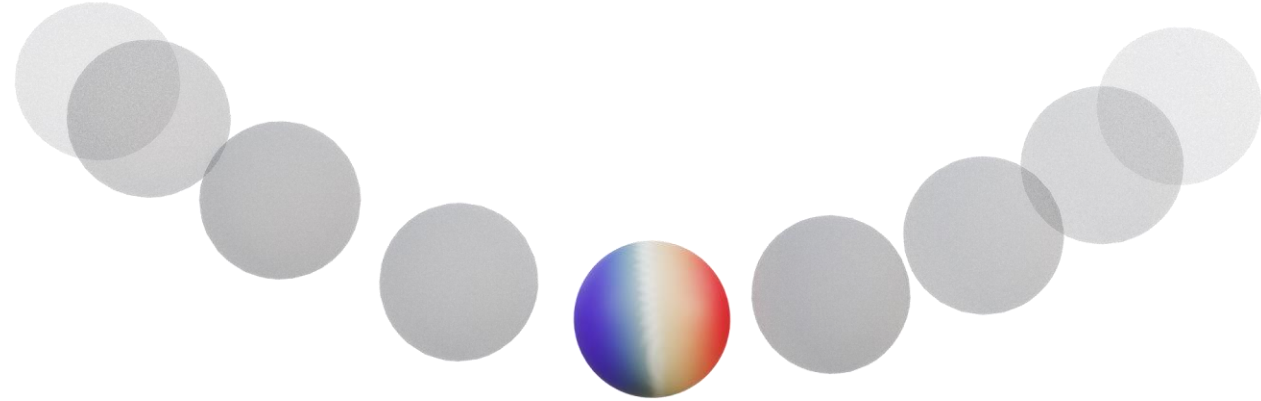


FIGURE 4c. Stretching the object so that its positions overlap again will relieve the strobing effect.



Smear frames

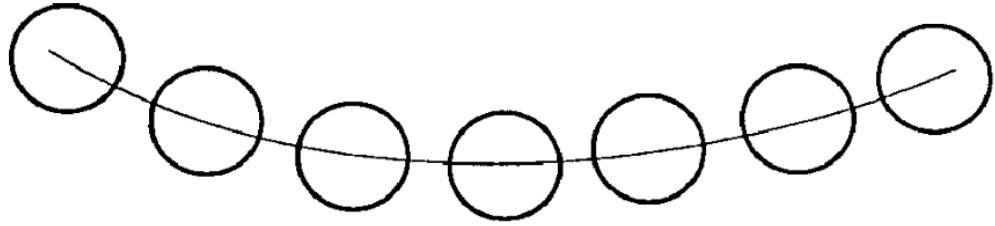


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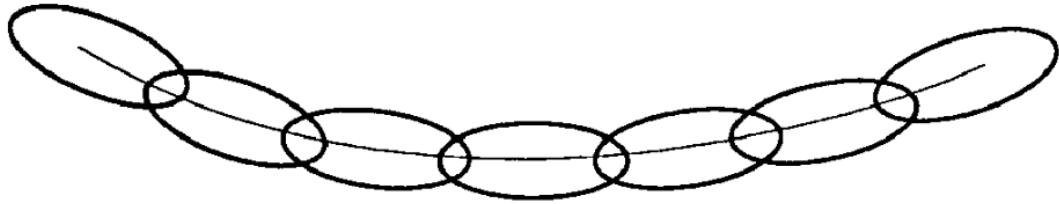


FIGURE 4c. Stretching the object so that its positions overlap again will relieve the strobing effect.



Smear frames

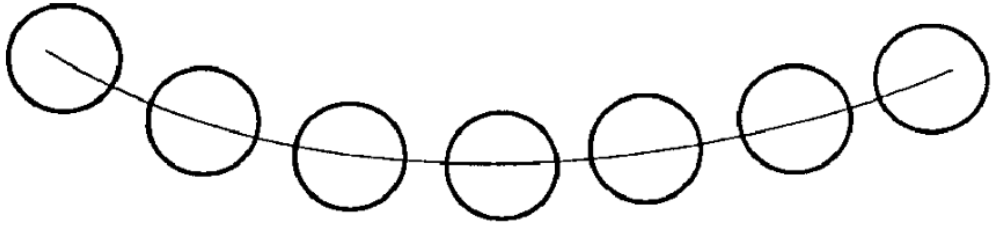


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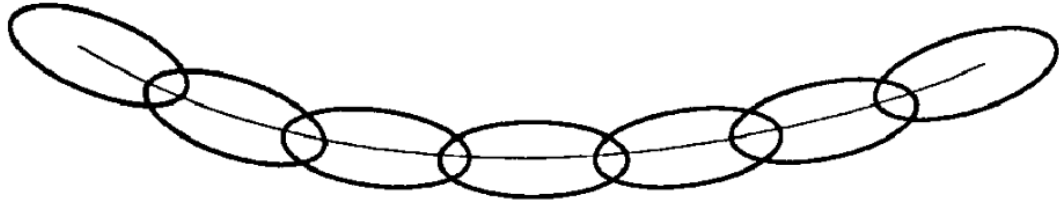
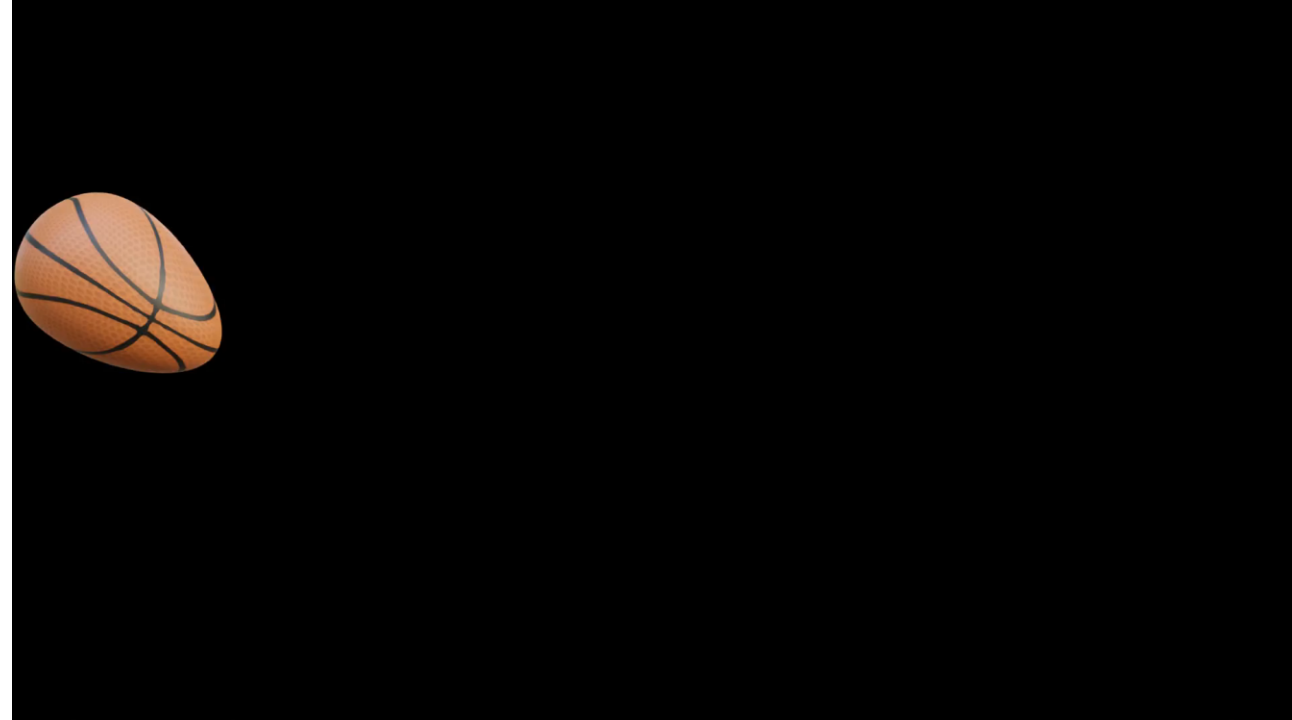
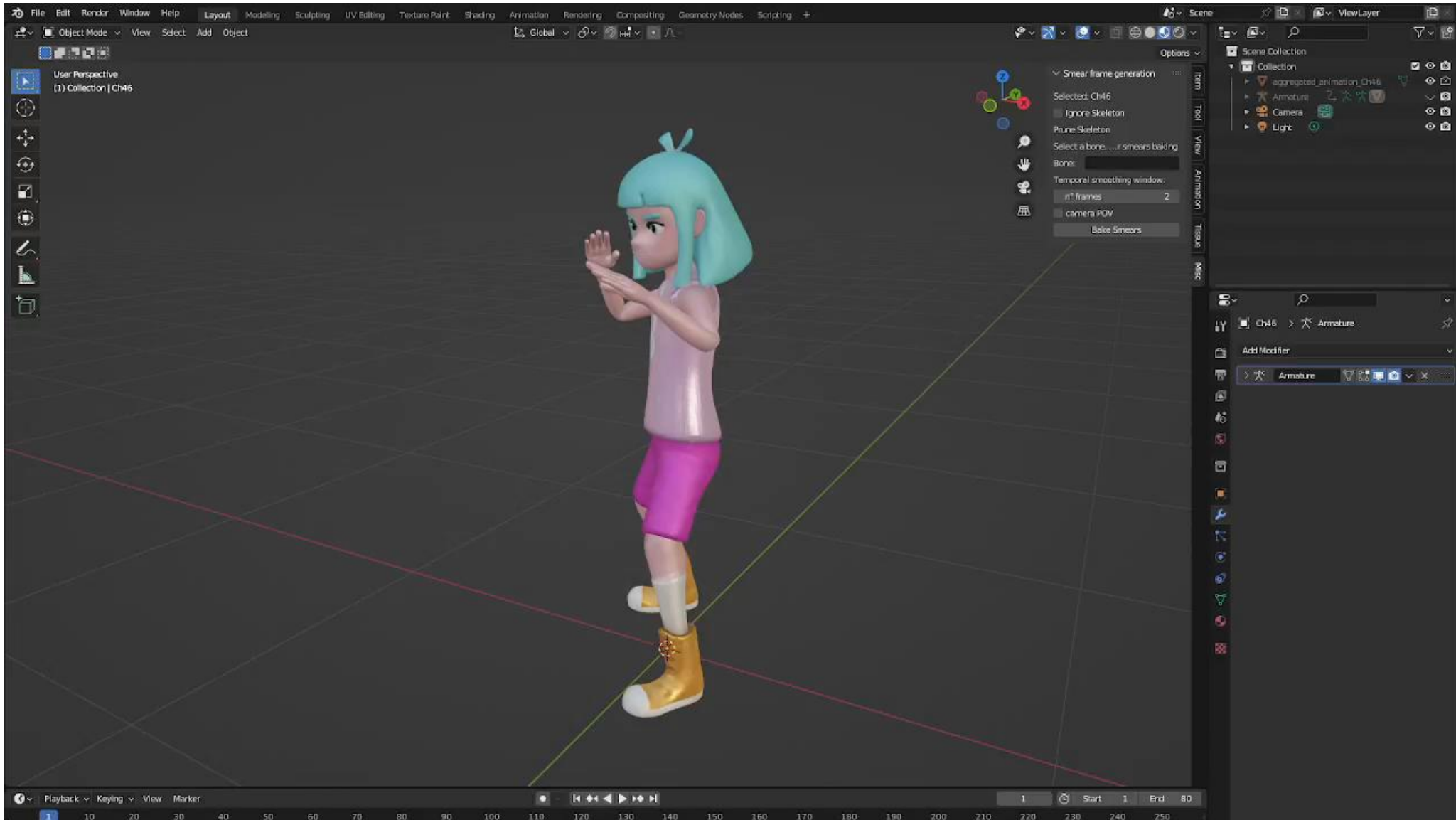


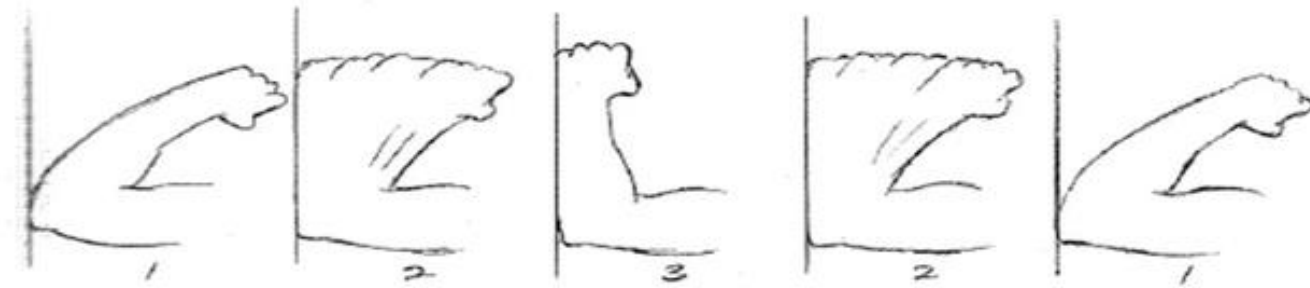
FIGURE 4c. Stretching the object so that its positions overlap again will relieve the strobing effect.



System demonstration



Results – Impact stylization



Richard Williams, *The Animator's Survival Kit* (2001)



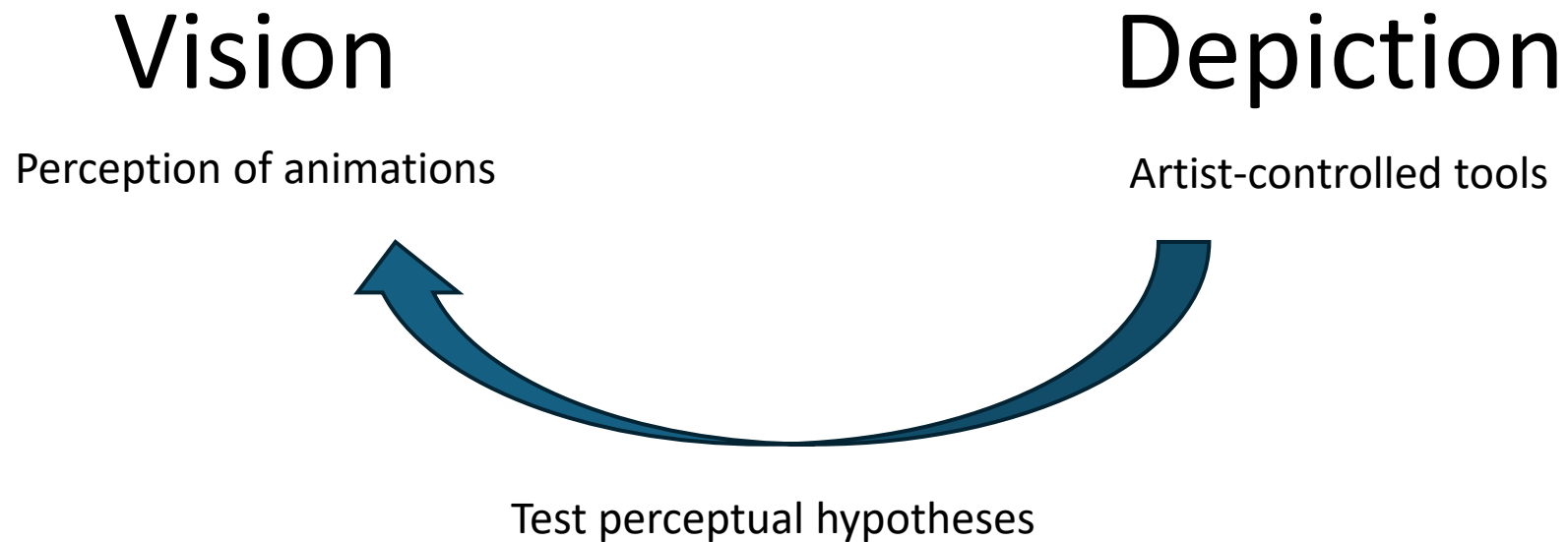
Default Stylization - Wobbly



Speed-based stylization



Relationship to perception



Perception of animations

In 2D

What

Perspective

Volume

How?

Occluded lines in motion

Sliding T-junctions

In 3D

What

Fast Motion

Mechanical properties

How?

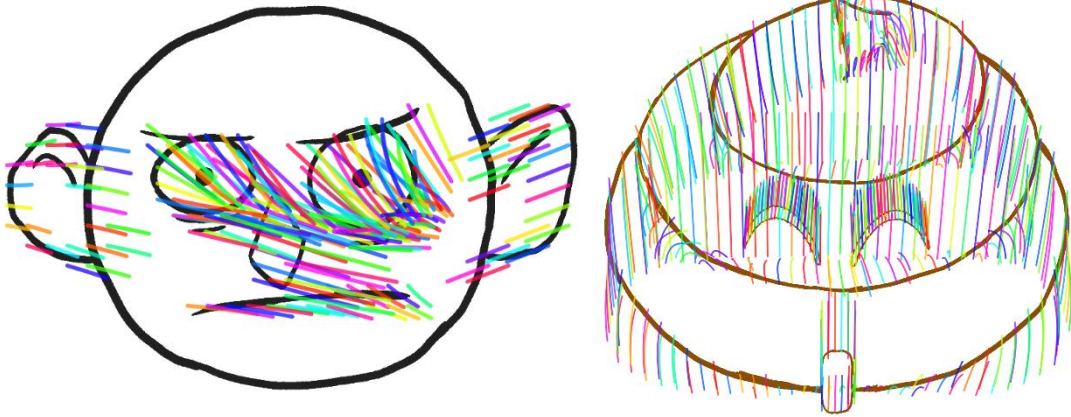
Deformation

Replicas

Link perception to objective information

- Animation trajectories

In 2D

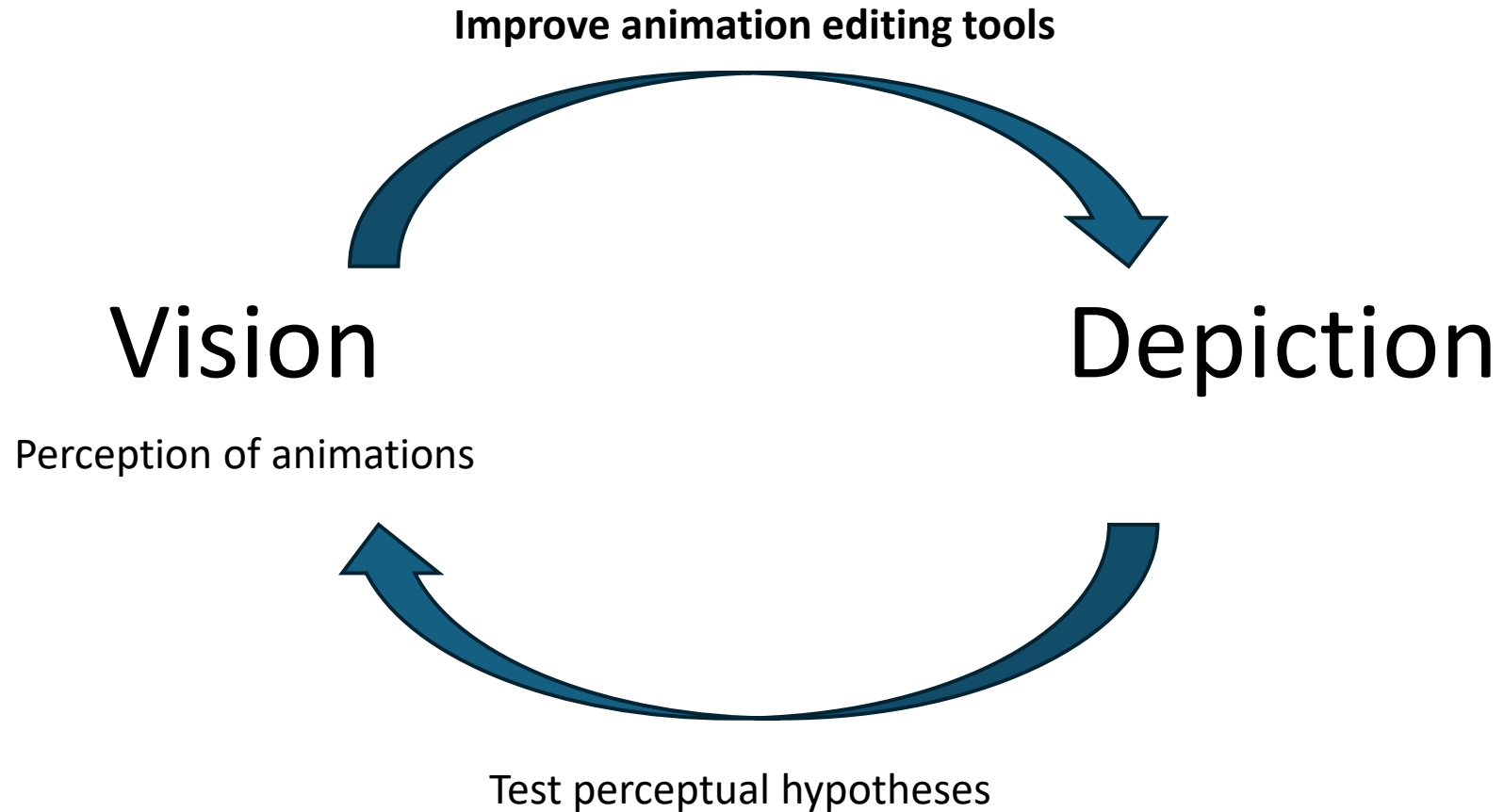


In 3D



- Predictable perceptual outcomes

Conclusion



Thank you for your
attention!