SM2231::3D Animation I Basics
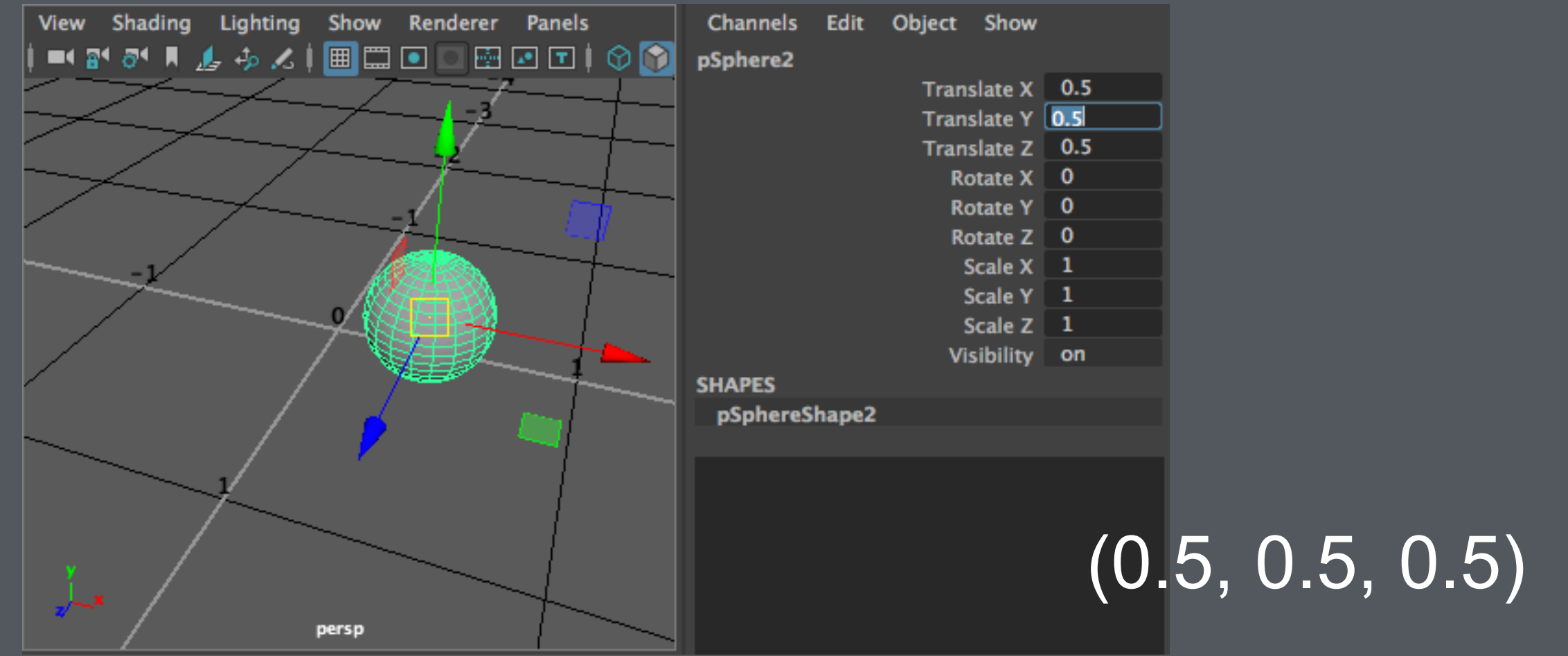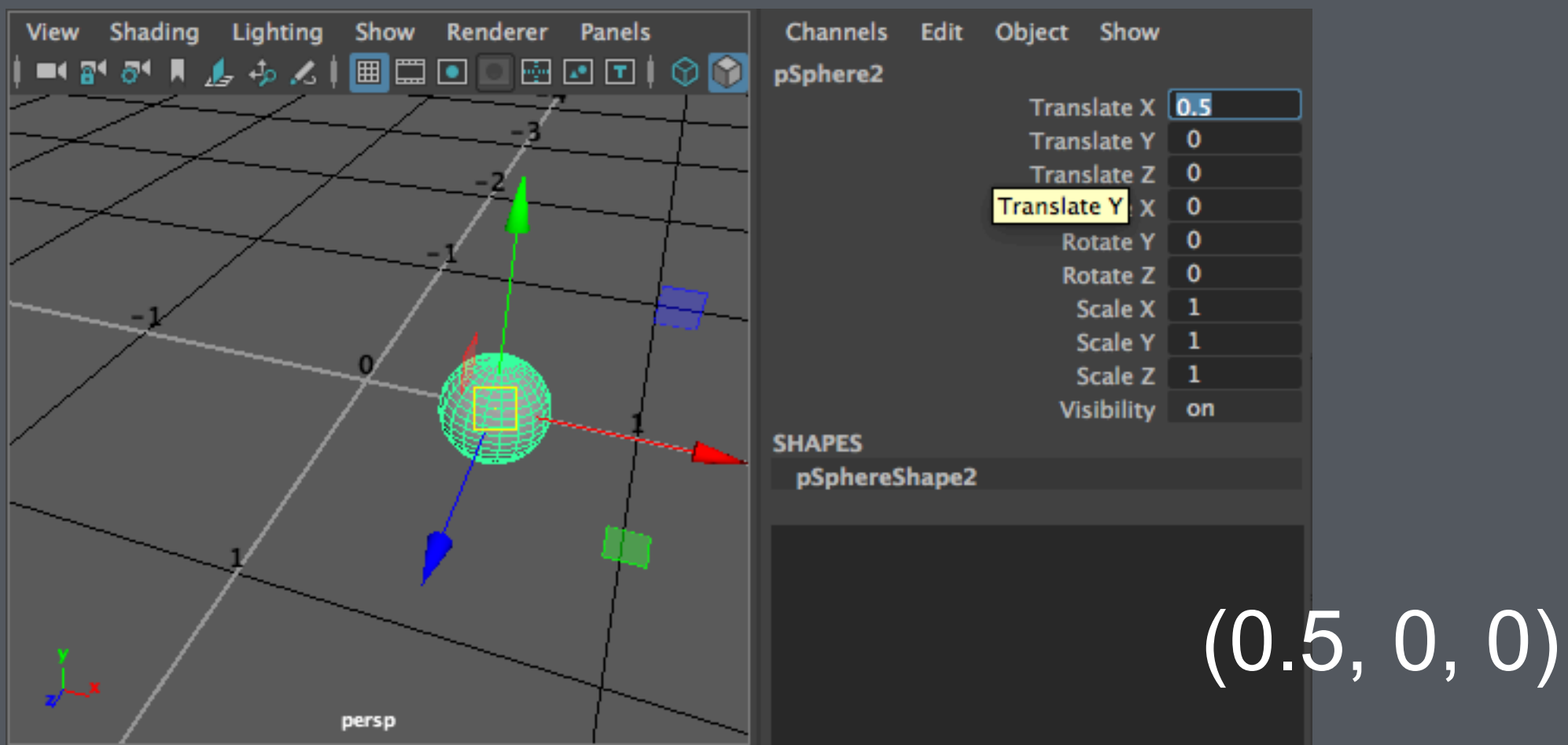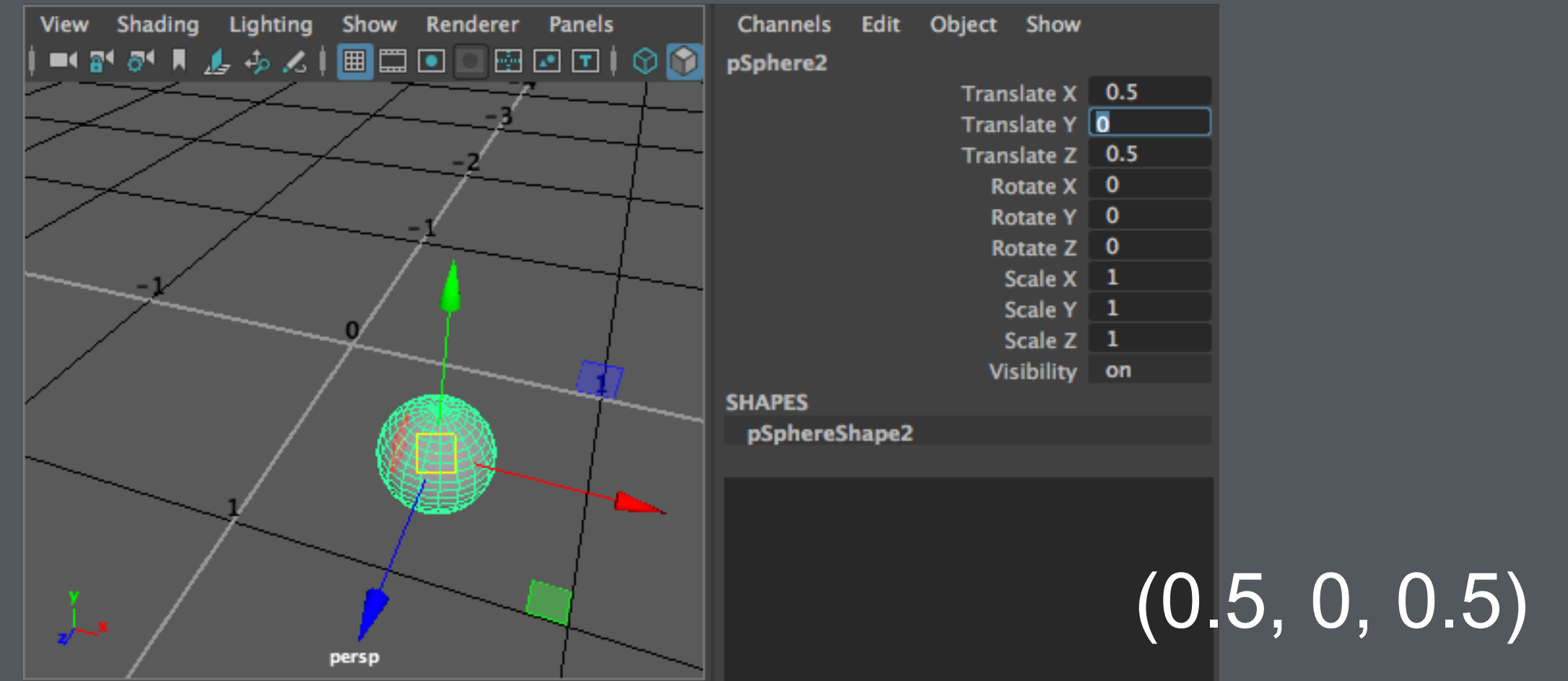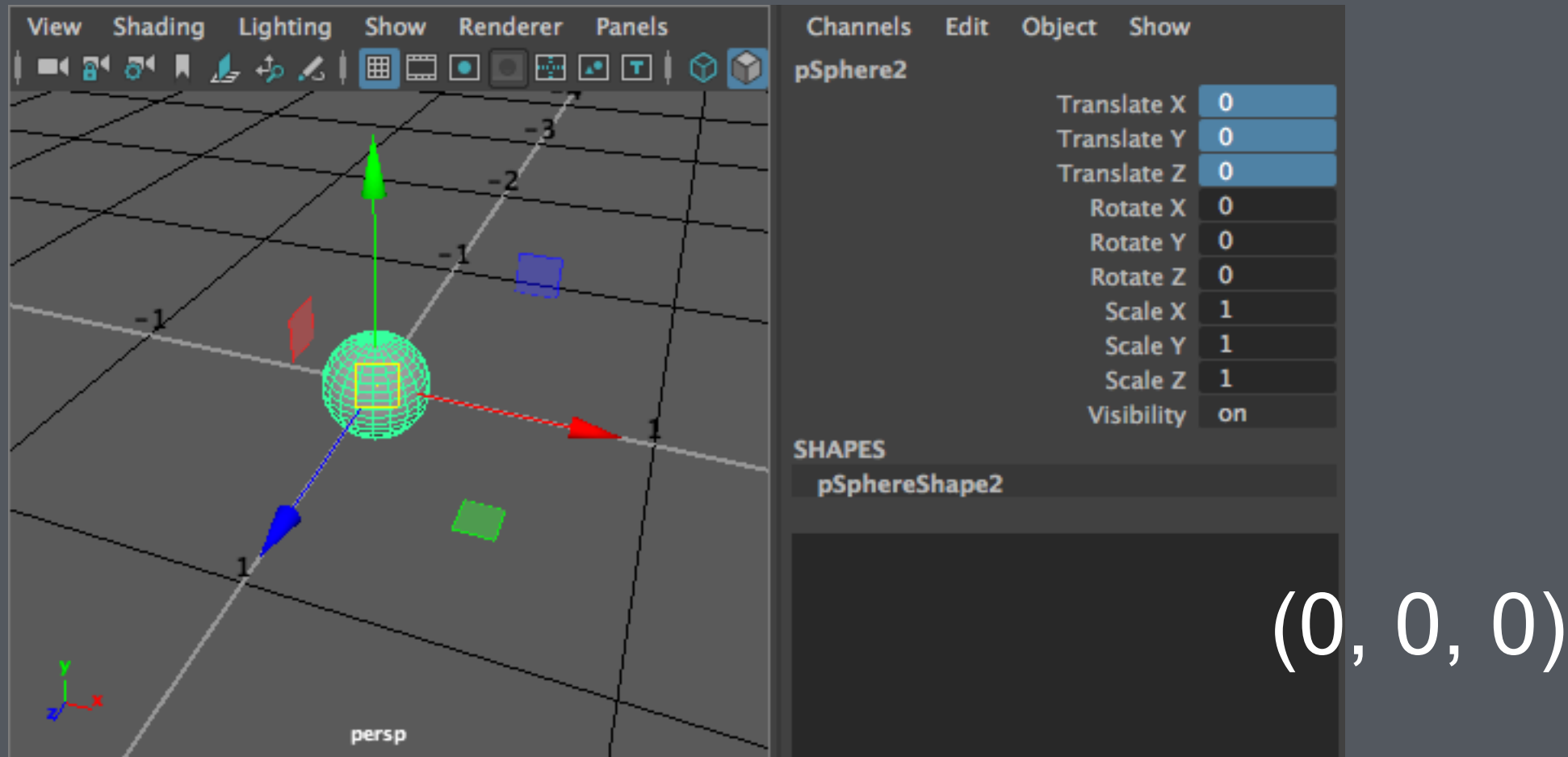
Animation

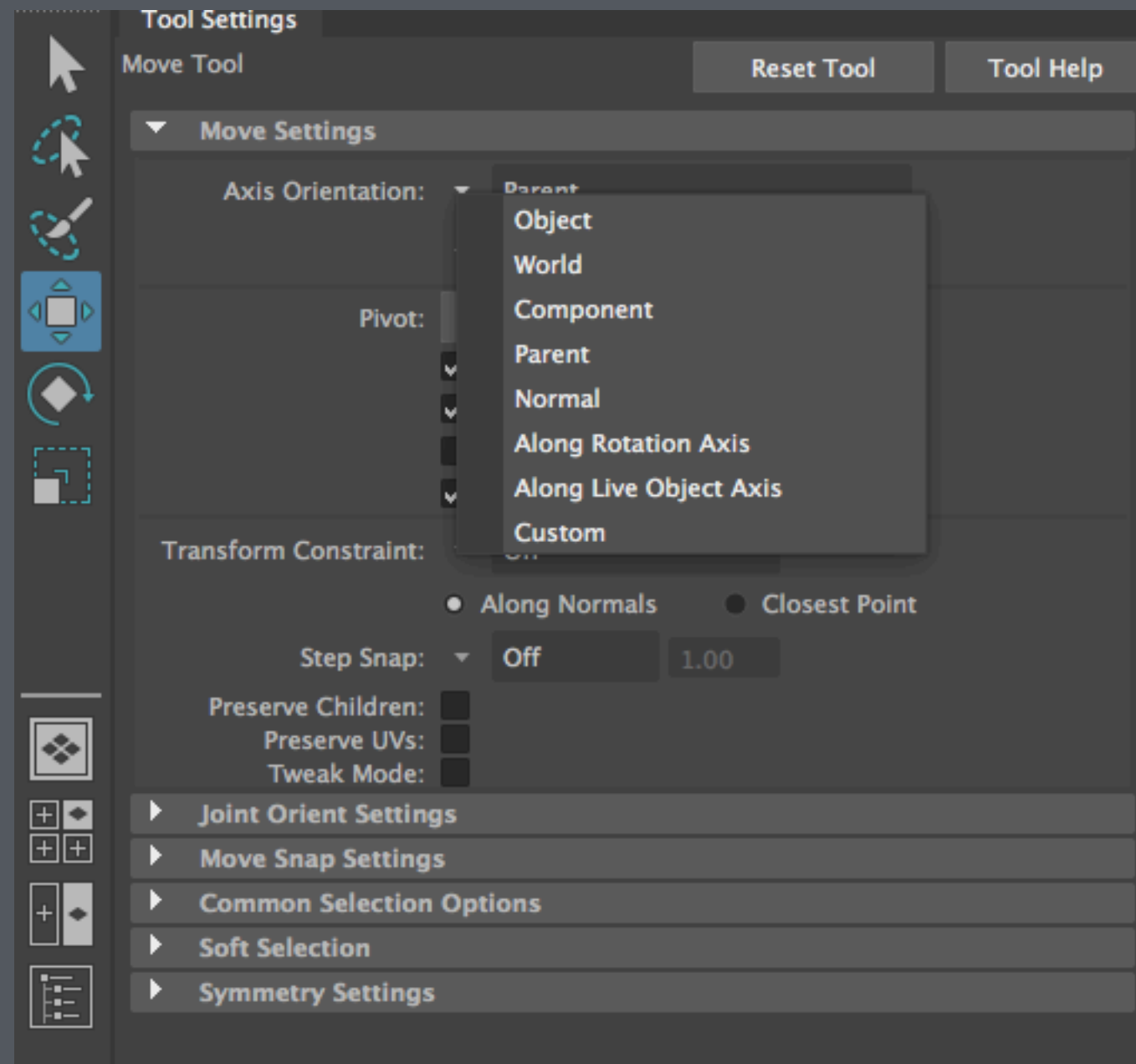# Coordinate System / Space

Coordinate System / Space

- Every point in a space has a coordinate (x, y, z)

- The 3 axes X, Y and Z define a space (coordinate system)
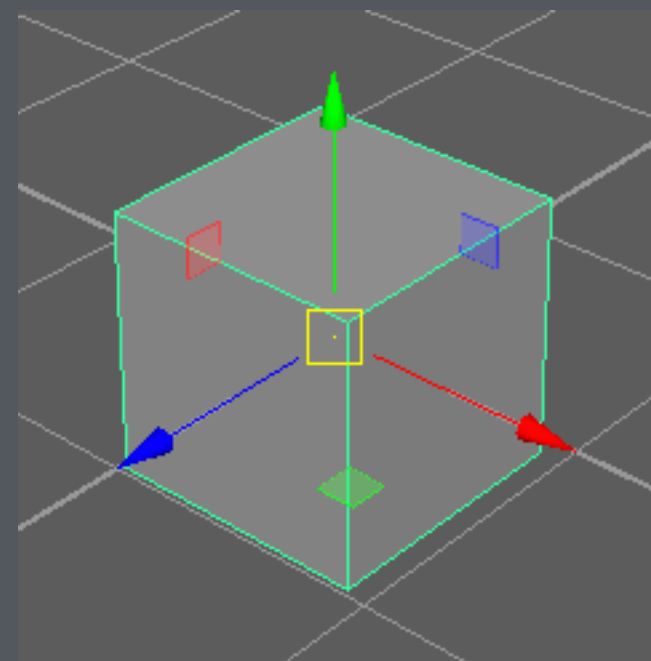
Position / Translation (X,Y, Z)

(0, 0, 0)

(0.5, 0, 0.5)

(0.5, 0, 0)

(0.5, 0.5, 0.5)

World, Local, Object Spaces

World, Local, Object spaces

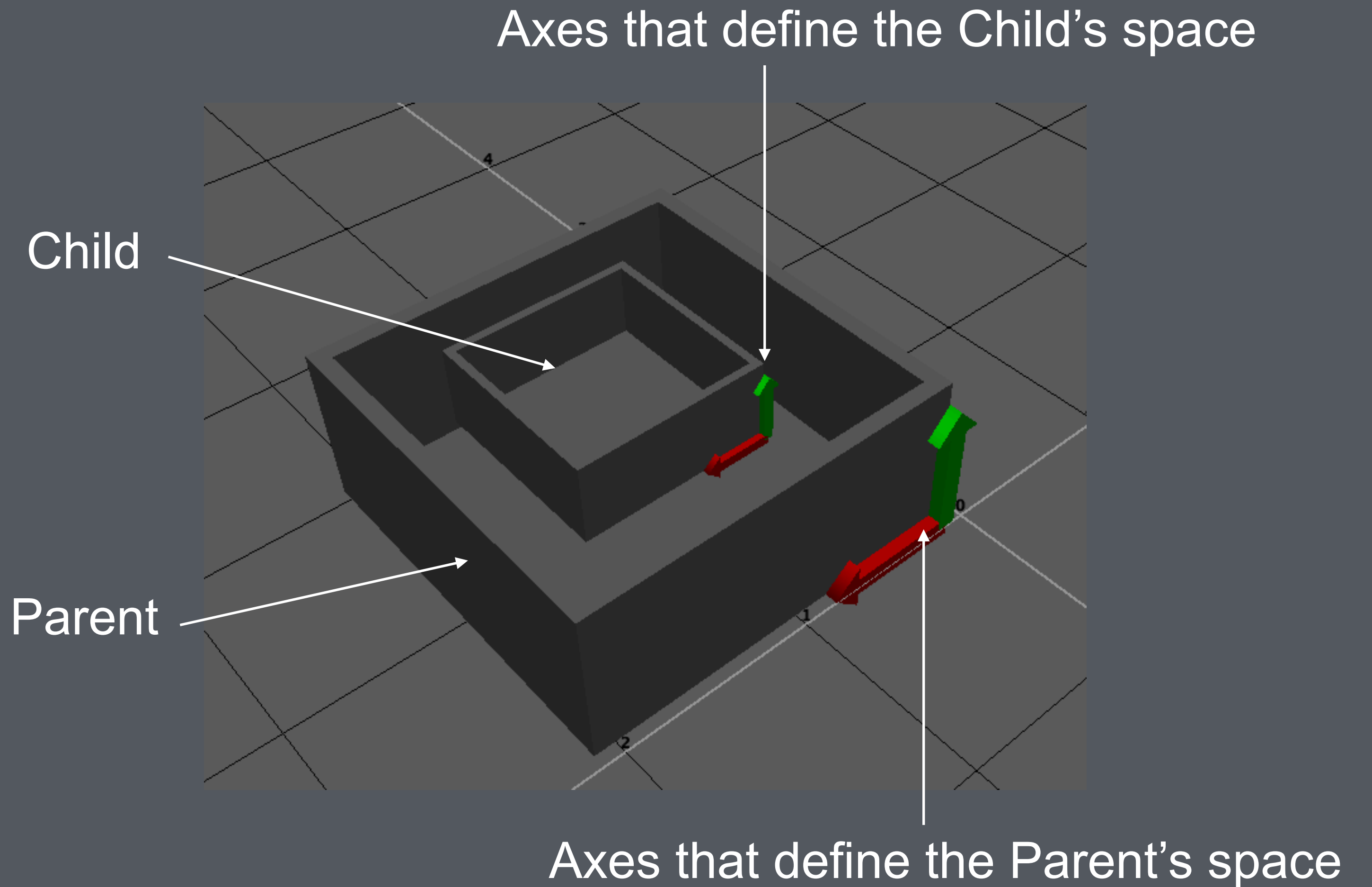Double click on the "Move" tool opens up the Tool Settings.

"Axis Orientation" aligns the axes of the Move manipulator to one of the many "spaces".


Axes of the Move manipulator

Local / Parent Space

Axes that define the Child's space

Child

- In a parent and child hierarchy, the child exists in the Parent's space

Parent

Axes that define the Parent's space

Local / Parent Space

- When the parent rotates and moves, its space also rotates and moves

- The child appears to rotate and move with the parent

- But the child, existing inside the Parent's space, experiences no movement at all

Axes that define the Child's space

Child

Parent

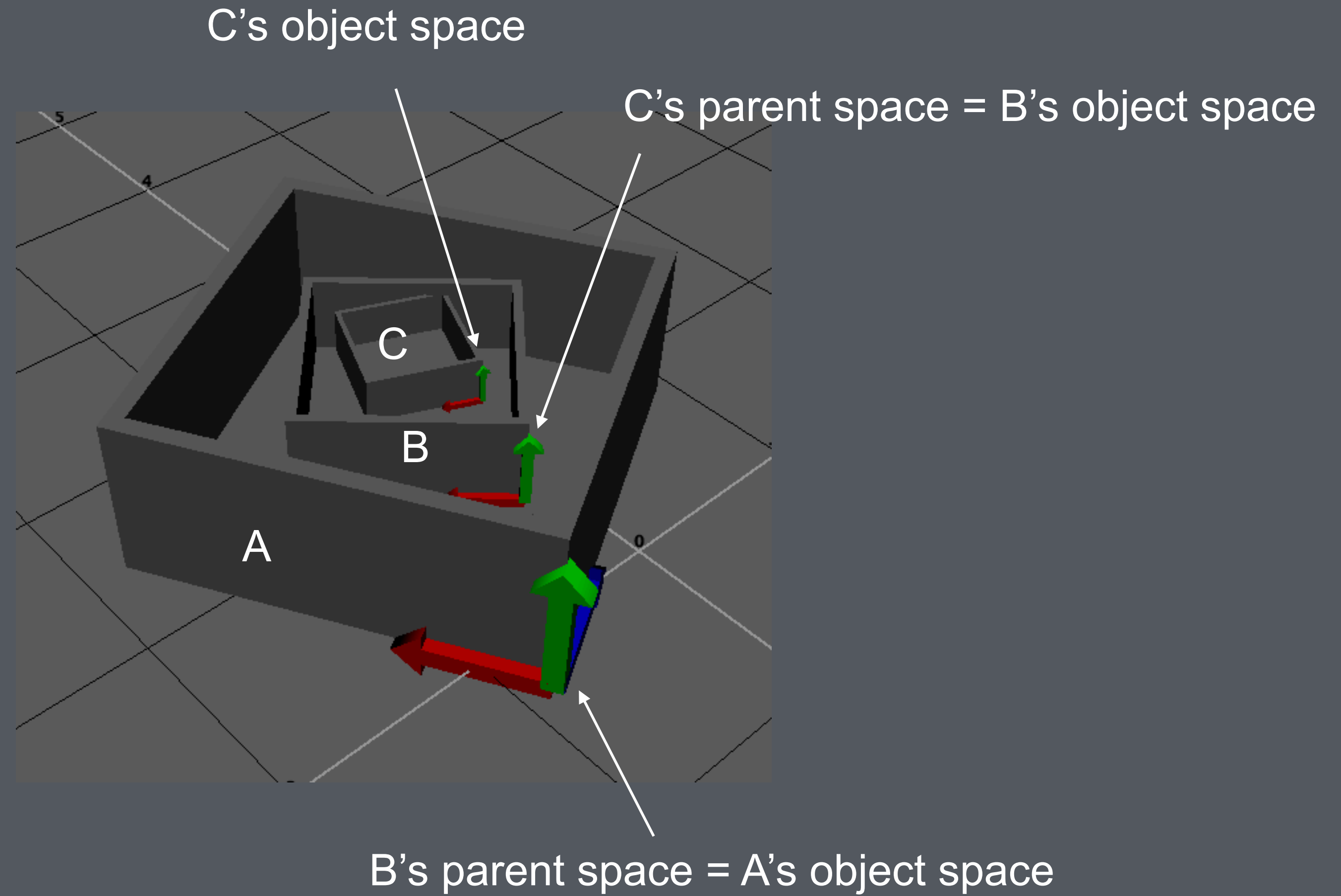Axes that define the Parent's space
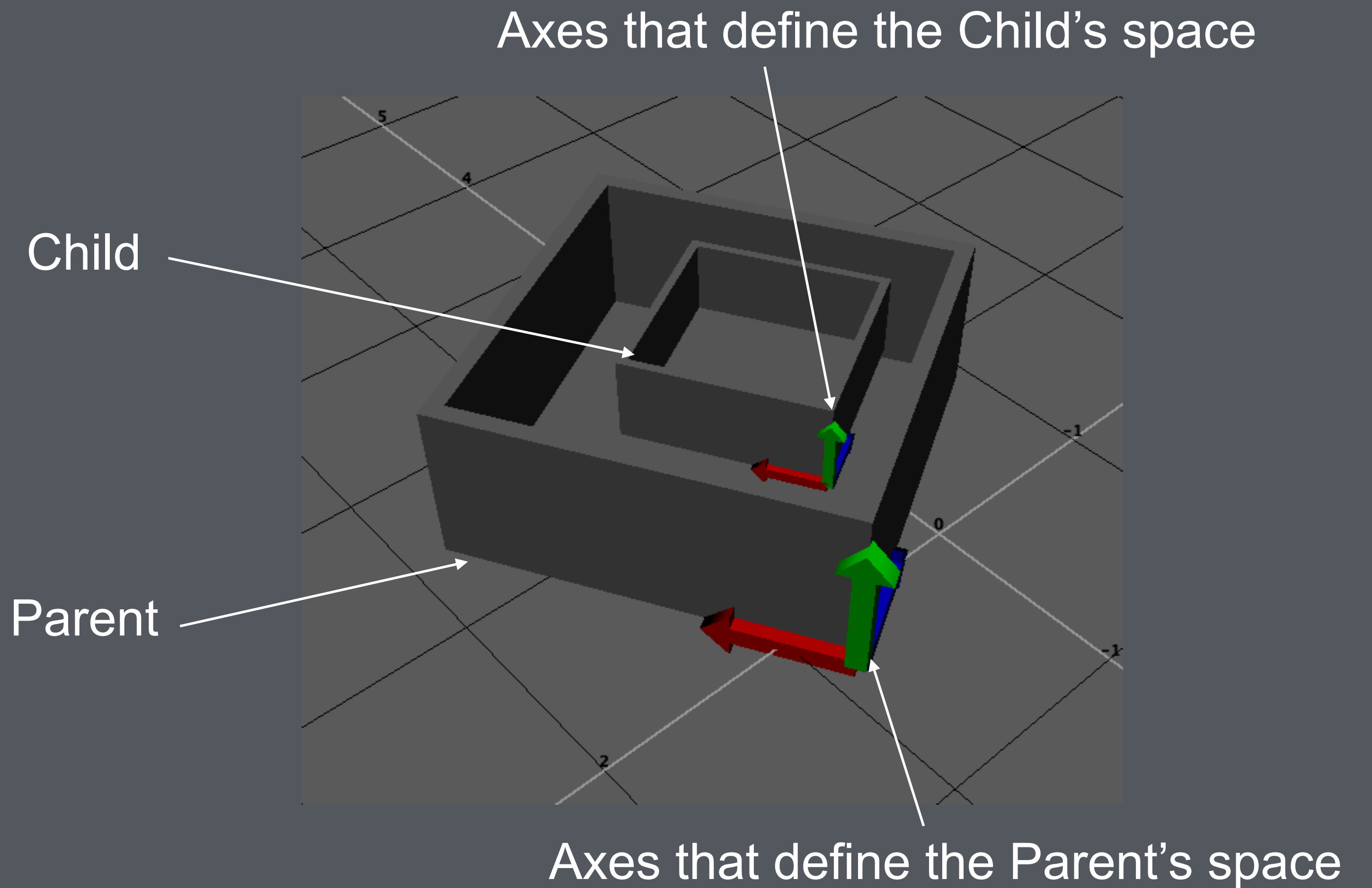
World Space

- The outermost space defined by 3 axes at the Origin

- Every object exists in its parent's space

- If an object has no parent, the object exists in the World Space
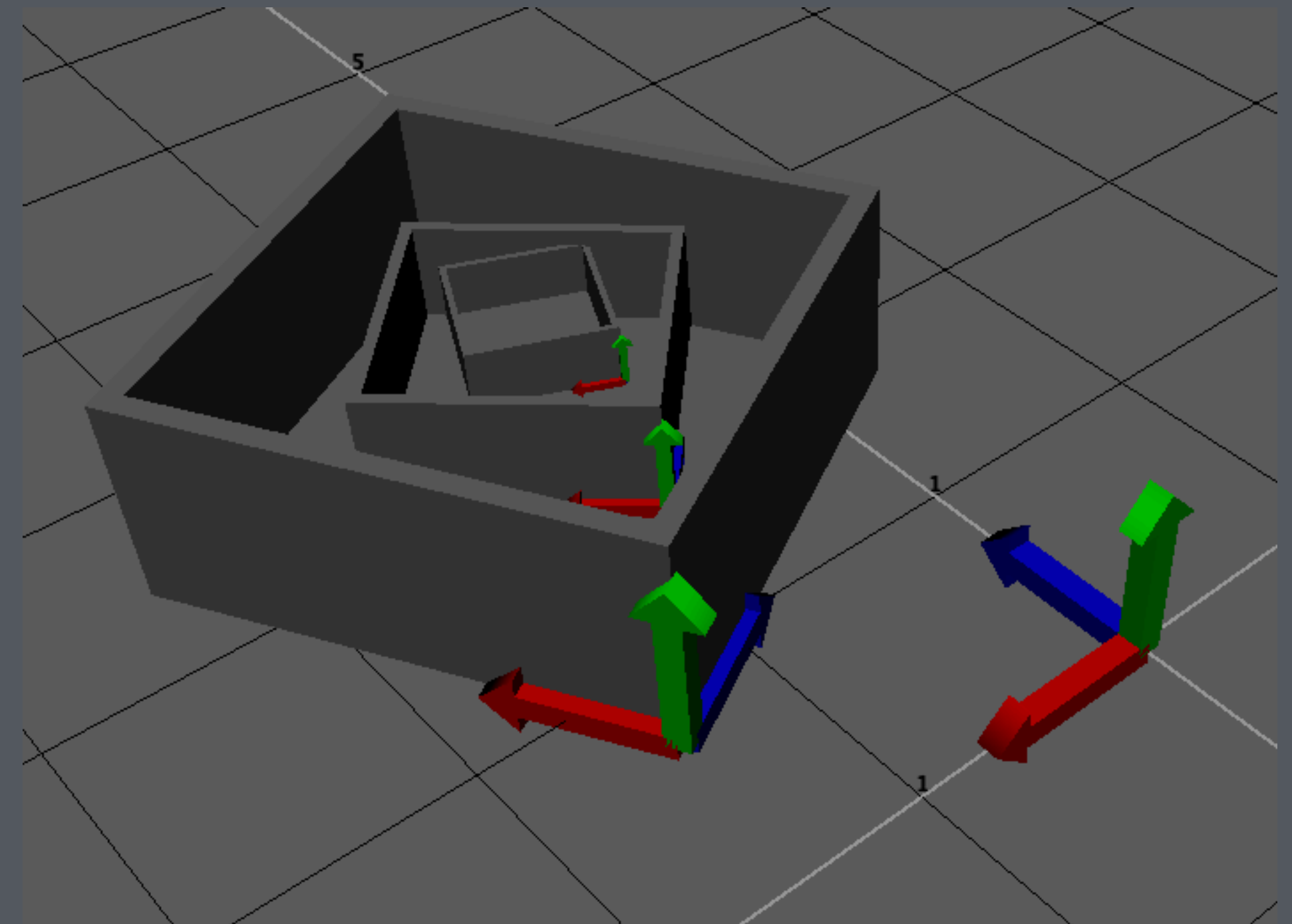
Object Space

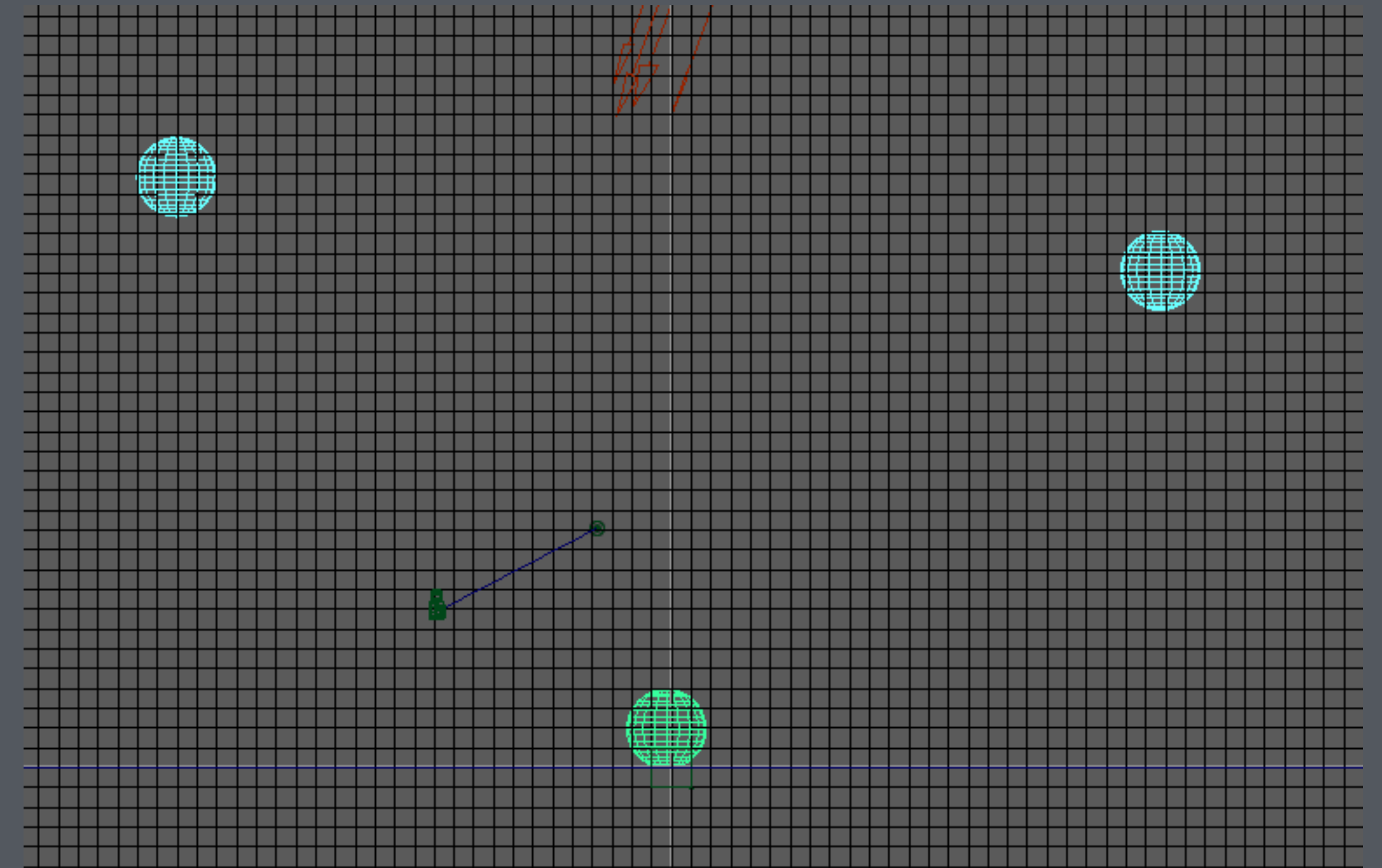- A child's parent (local) space is the parent's object space

C's object space

C's parent space = B's object space

C

B

A

B's parent space = A's object space
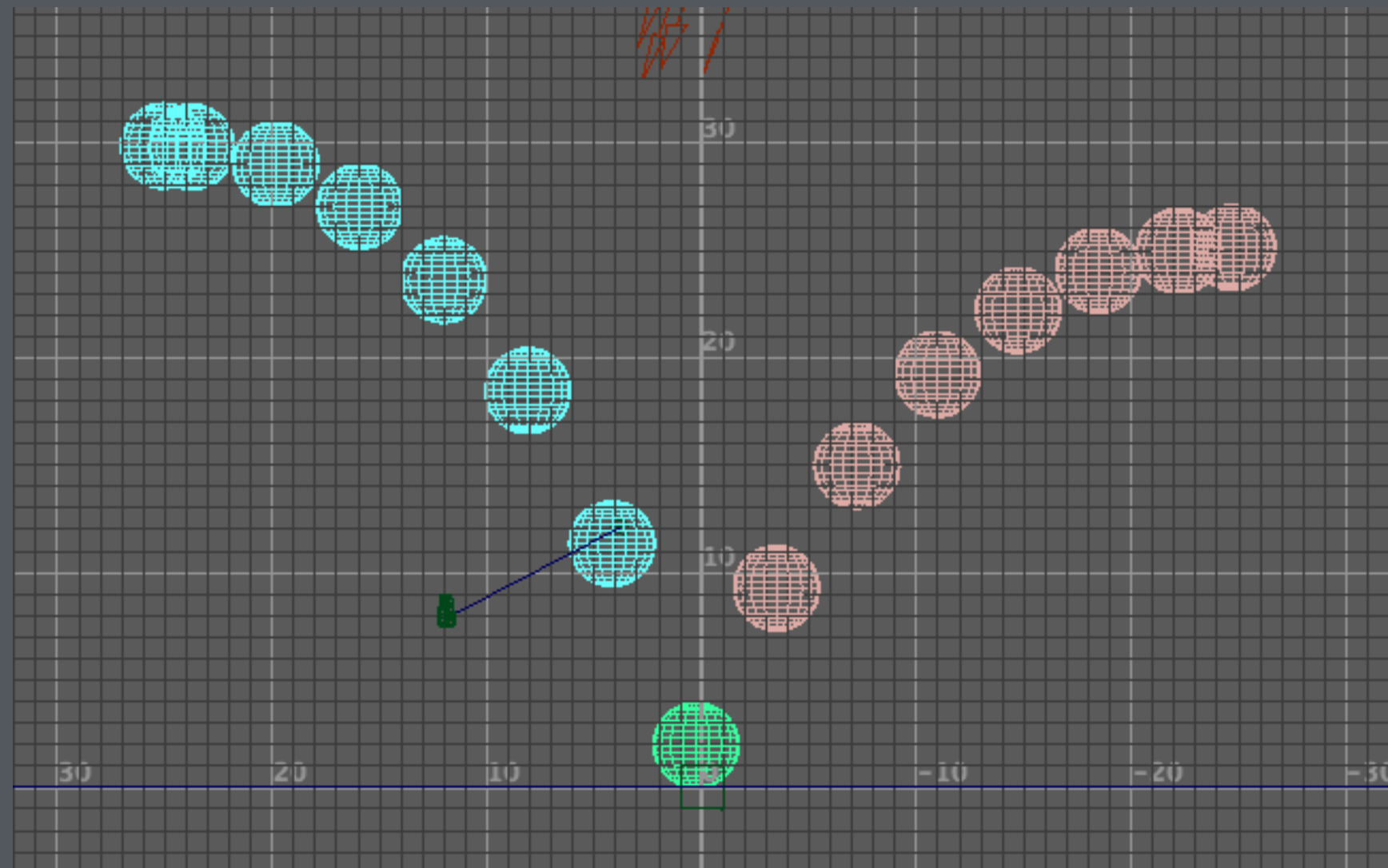
Keyframes

Setting Keyframes

side (defaultRenderLayer) - X

This is what we want to achieve
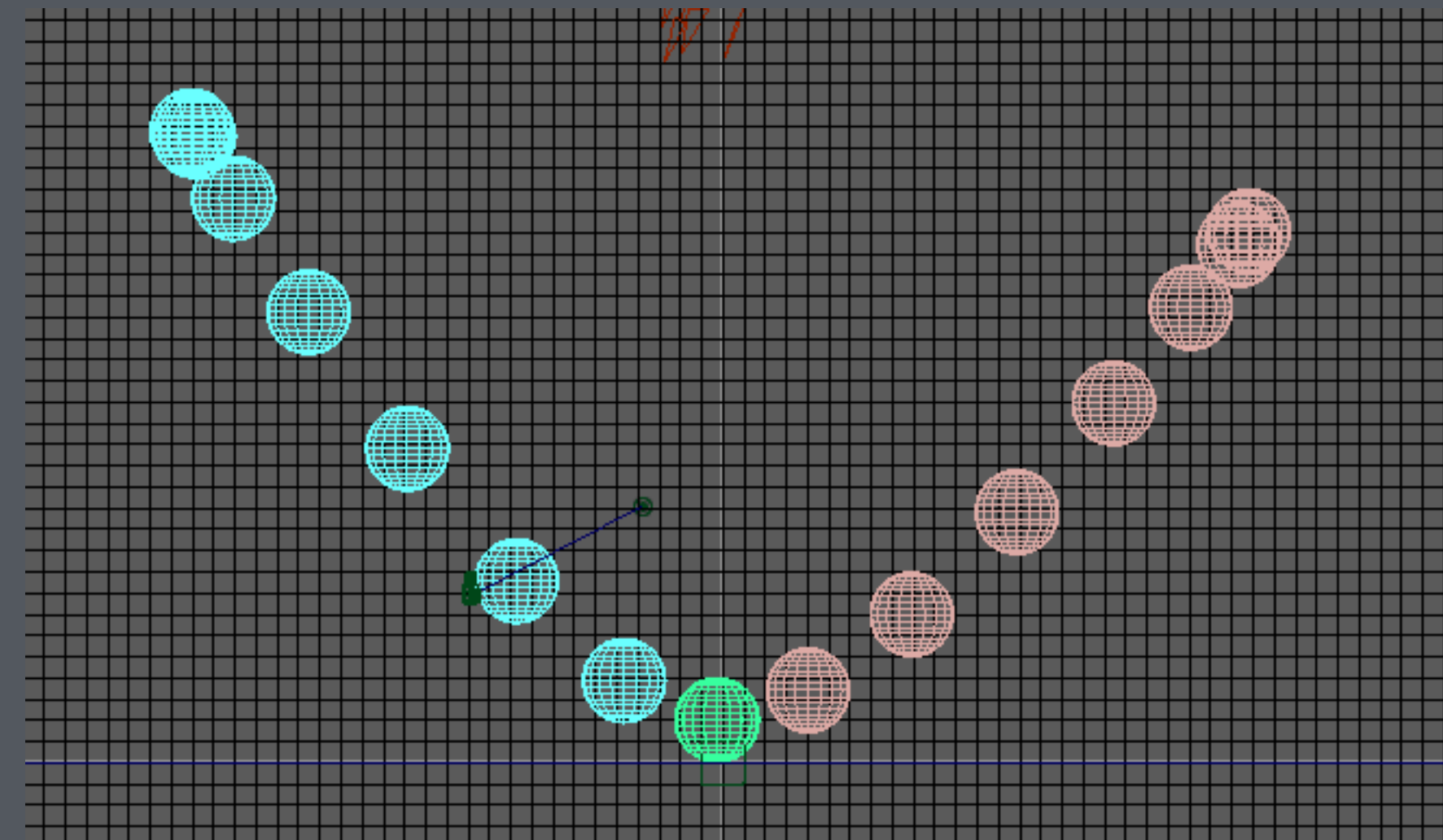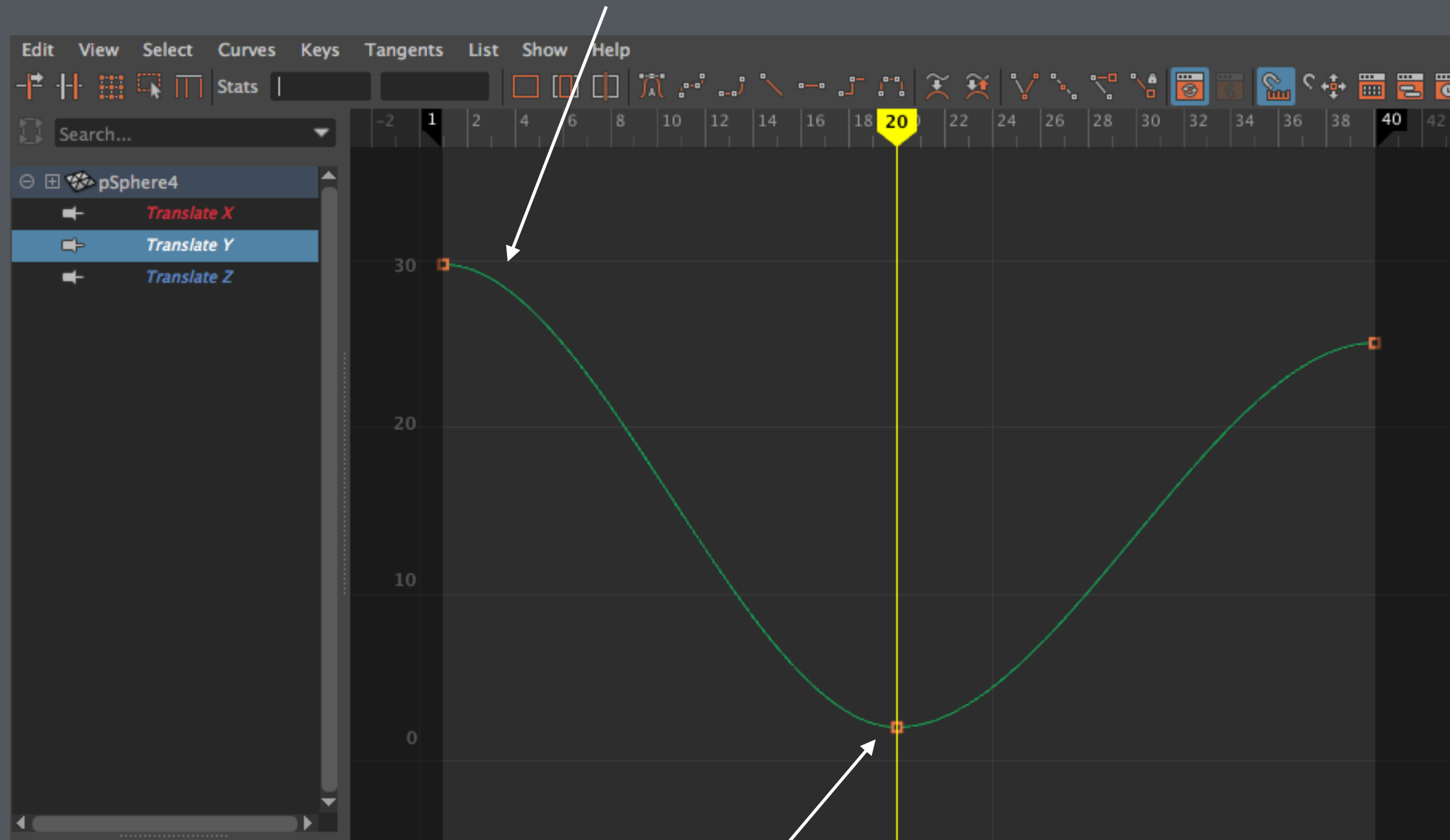
So we set 3 Keyframes

But instead of getting this..

.. we get this, which looks nothing like a bouncing ball

Understand the Animation Graph

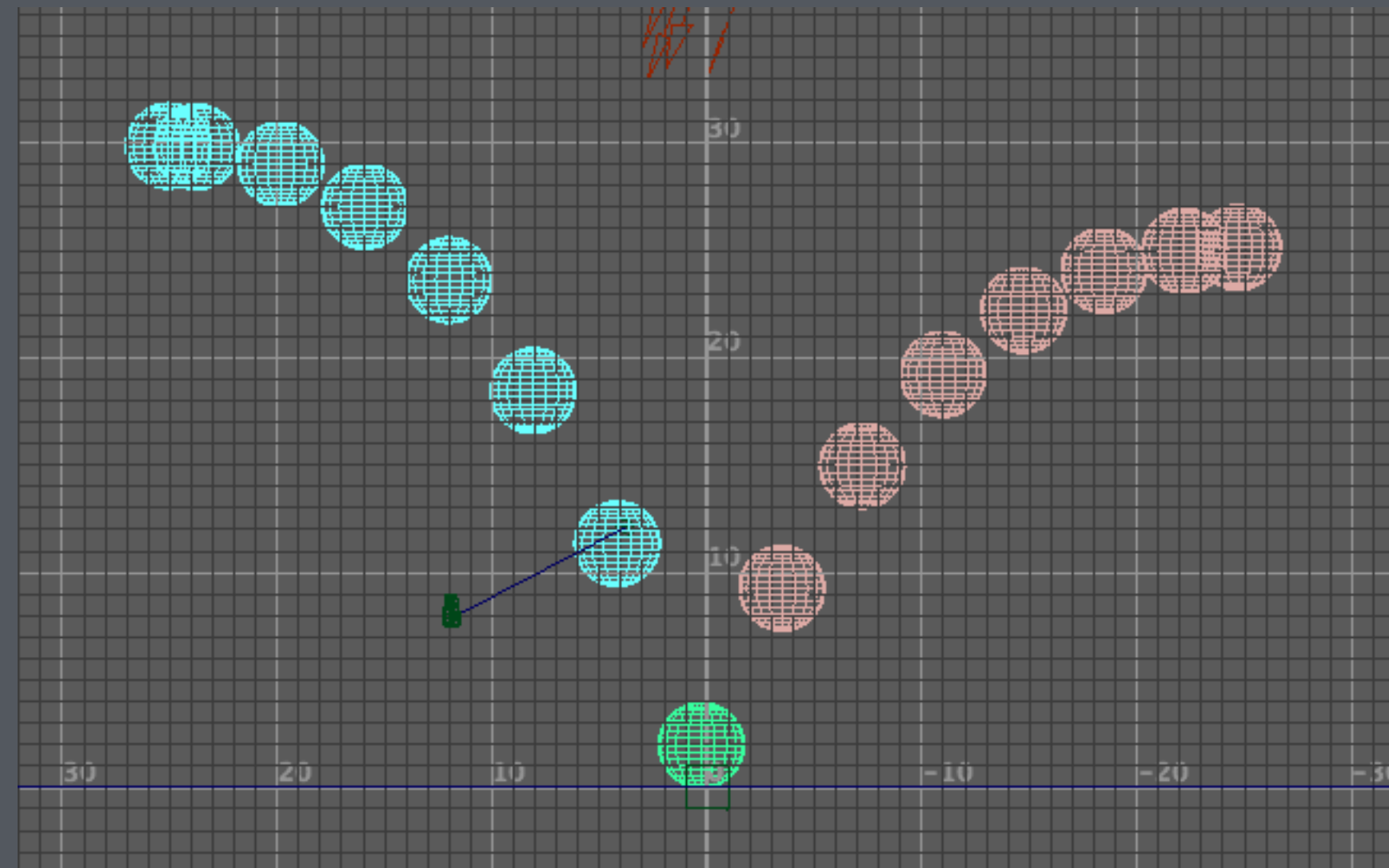The ball starts off slowly, so having slow-out here is ok

The problem is in the shape of the animation curve.

When 2 or more keyframes are set, the in-between frames are *interpolated* by Maya.
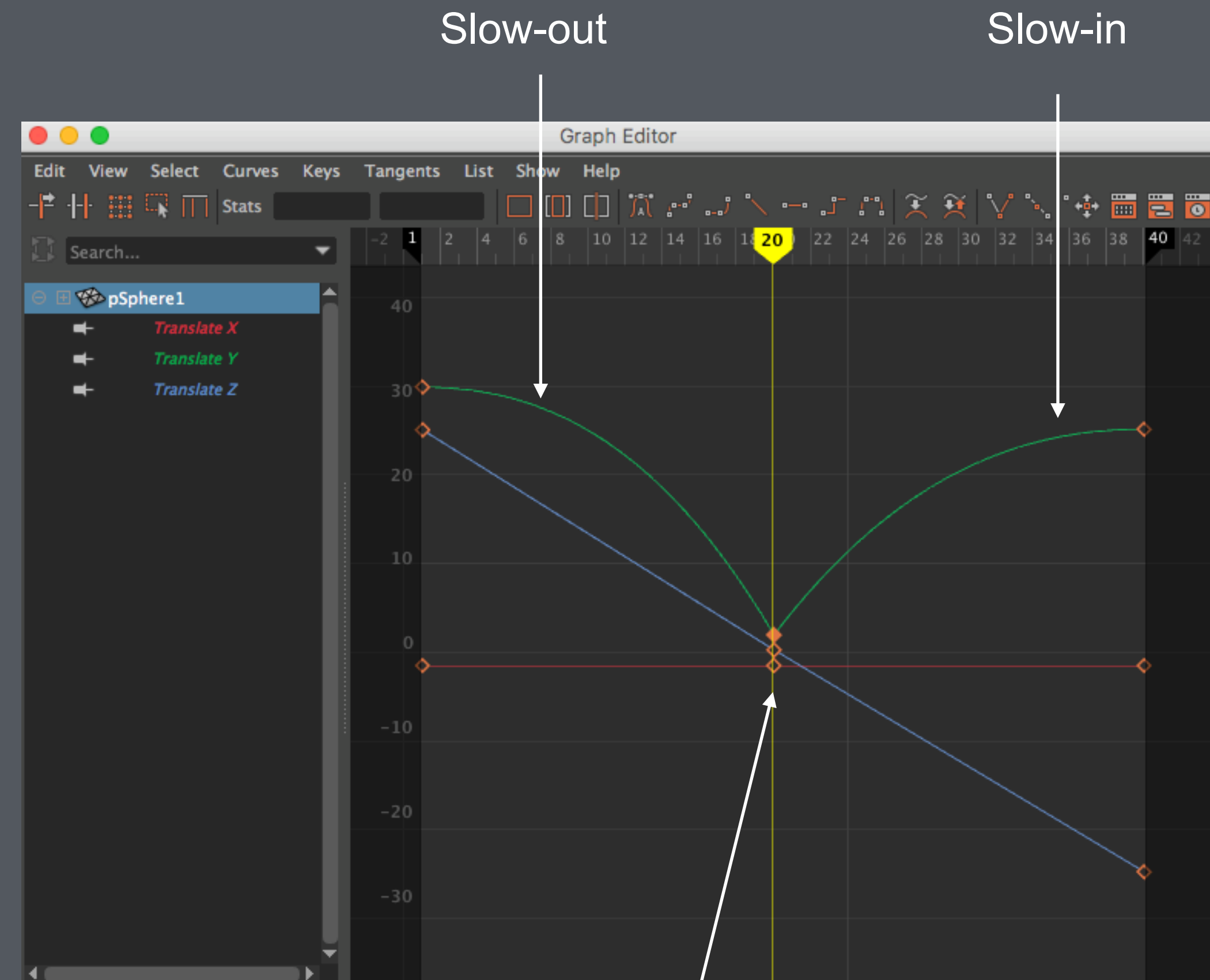
But the default interpolation is a smooth curve, with *slow-in* and *slow-out* at the keyframes.

But we don't want slow-in here when the ball hits the ground at full speed
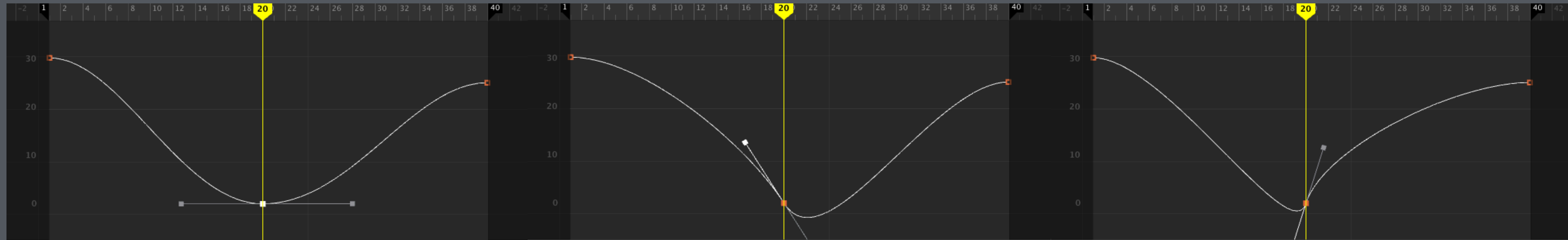
Animation Graph

Slow-out

Slow-in

Graph Editor

Edit   View   Select   Curves   Keys   Tangents   List   Show   Help

Stats

Search...

pSphere1
  Translate X
  Translate Y
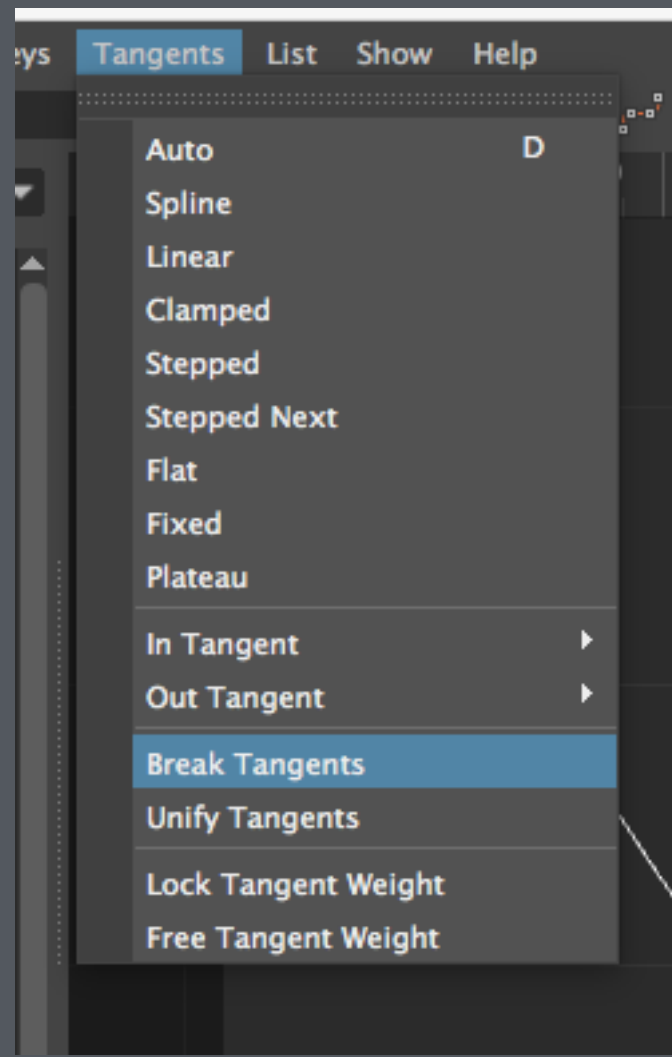 Translate Z

This is the correct shape of the curve

No Slow-in and Slow-out

Manipulating the animation curve

:(

:(:(

Or
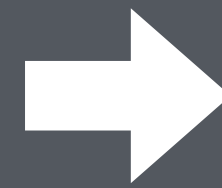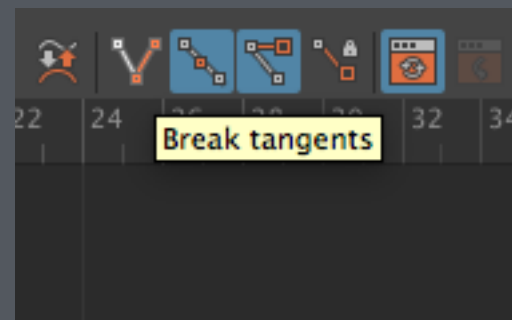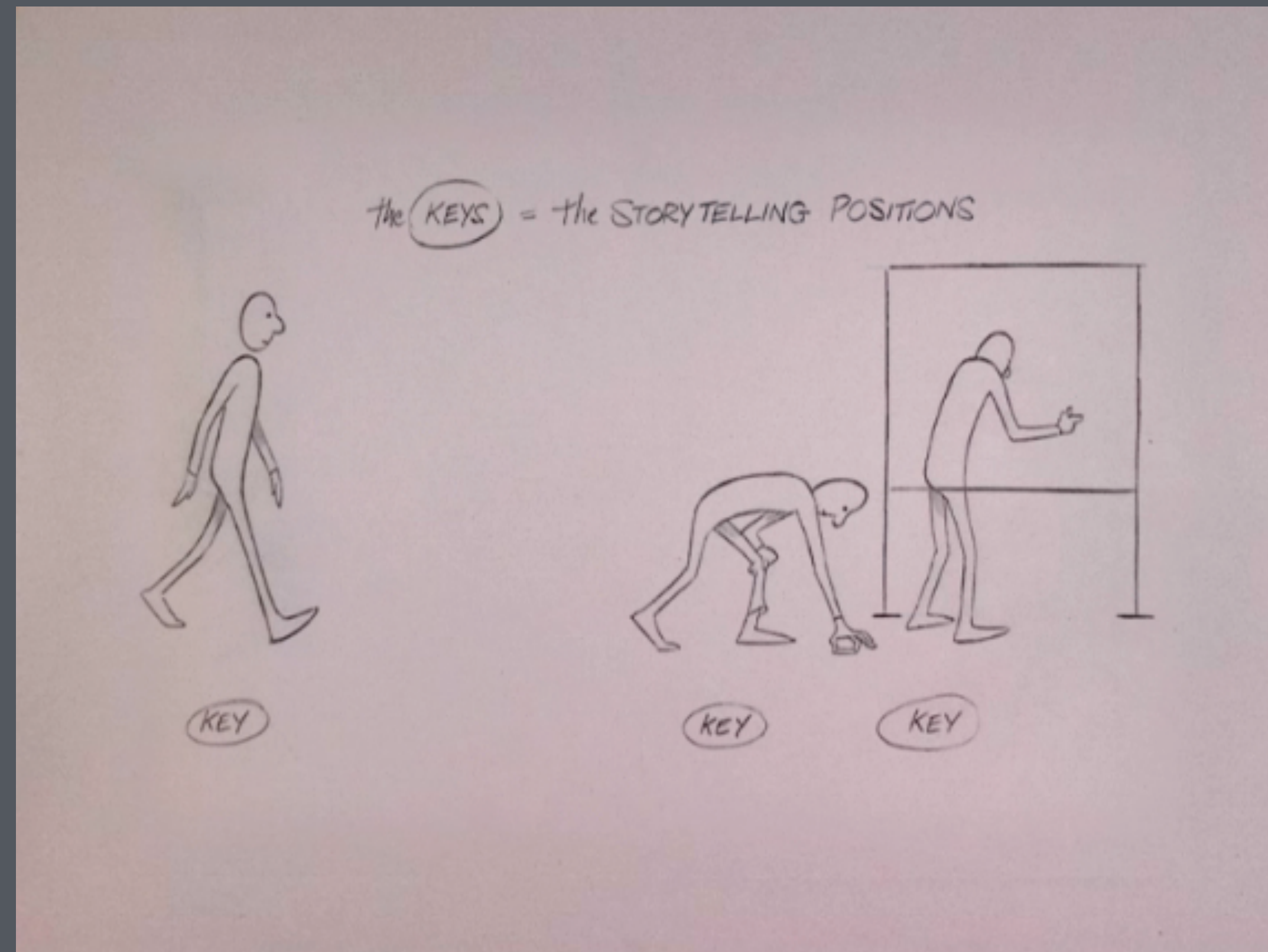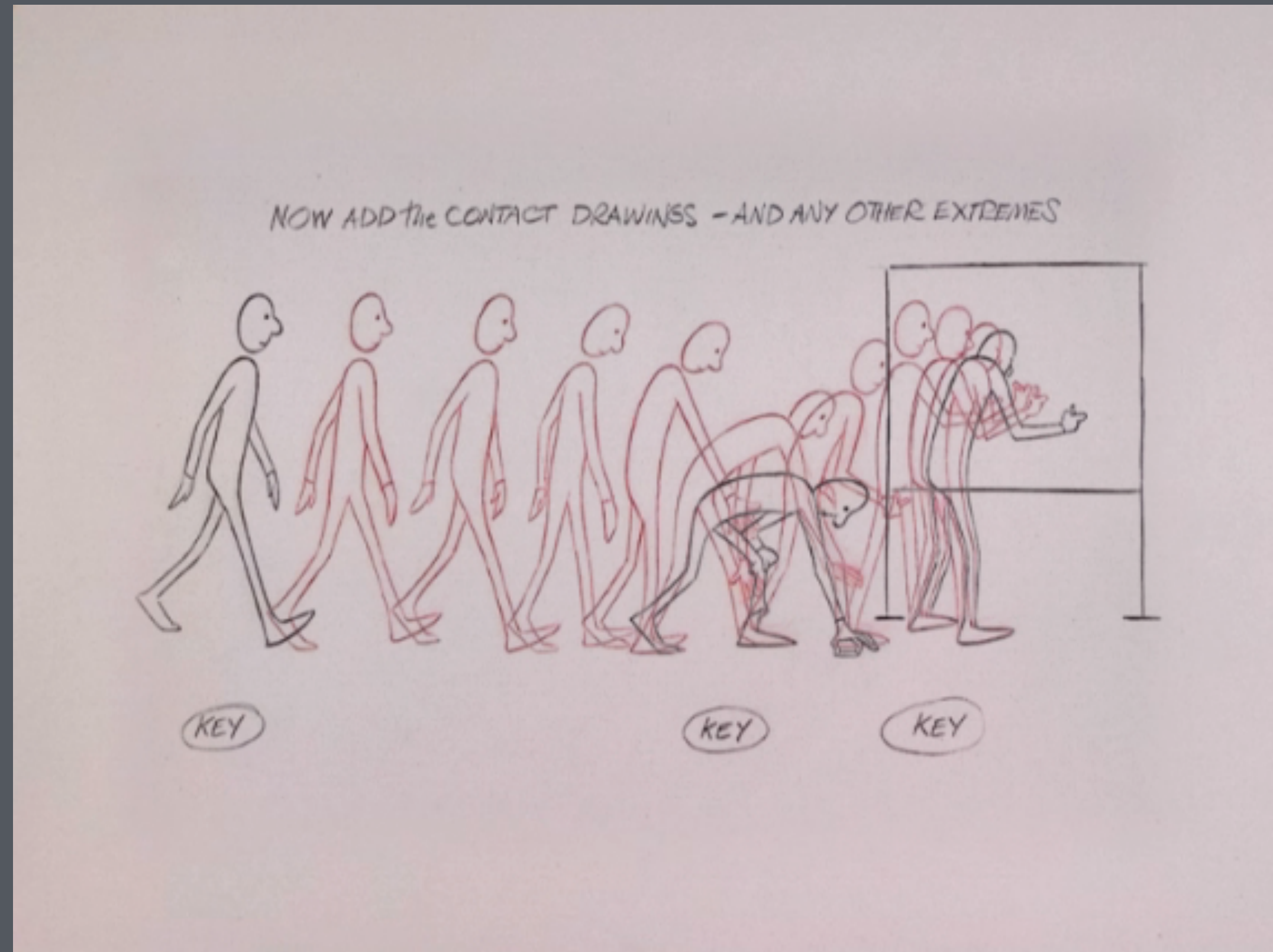
Break tangents

:)
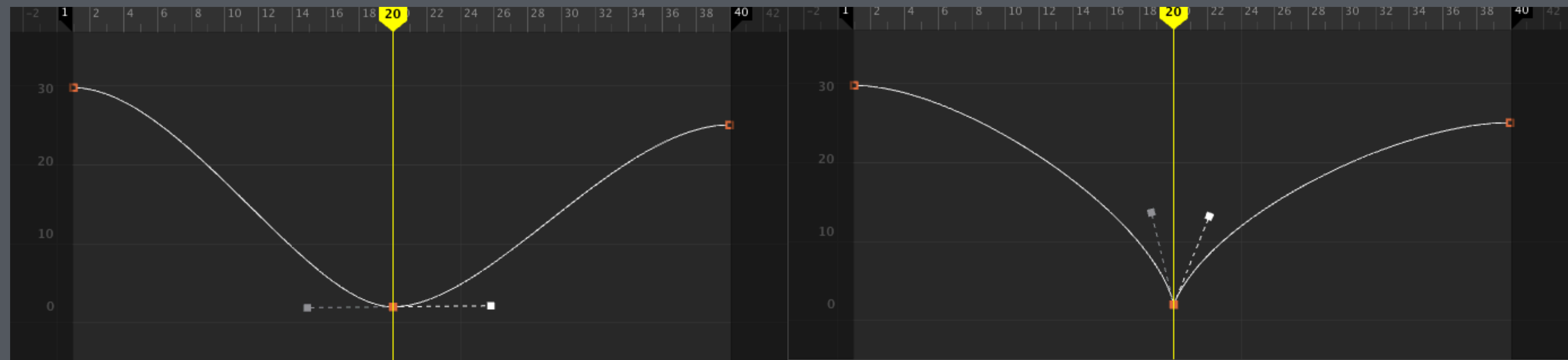
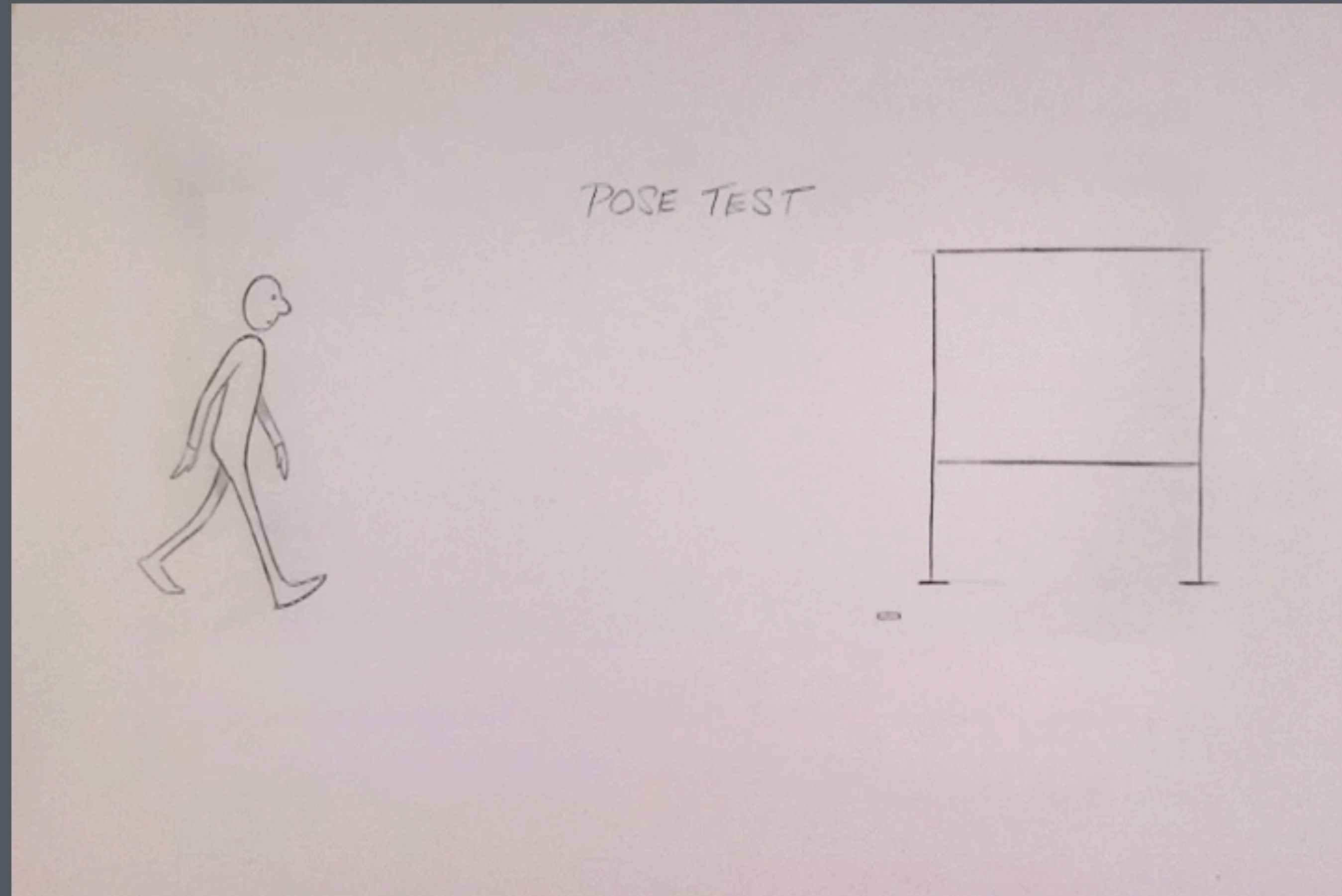# Pose to Pose Animation
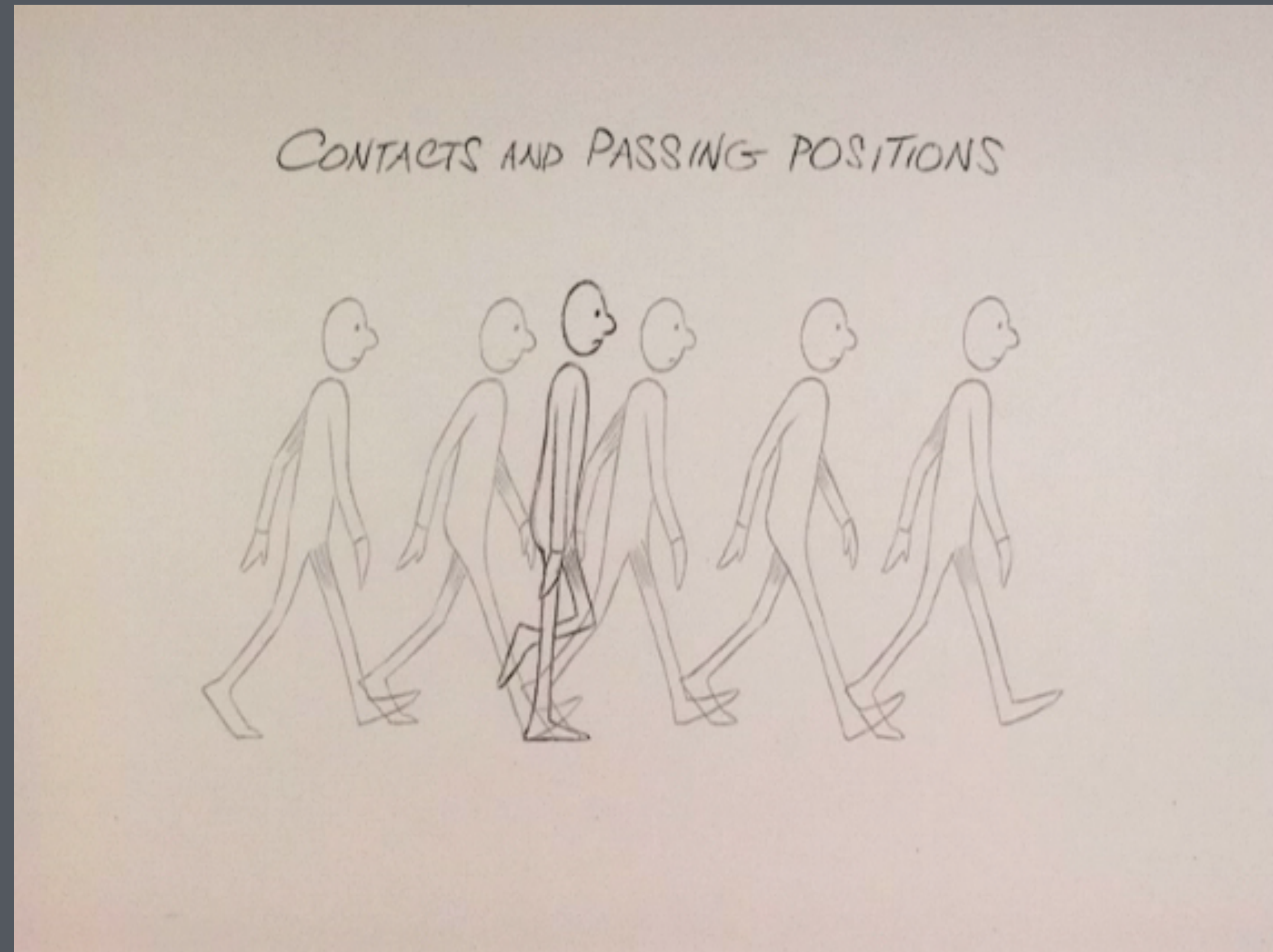
Pose to Pose Animation

Pose to Pose Animation

Added Extremes

Pose to Pose Animation

CONTACTS AND PASSING POSITIONS

Passing Positions

Pose to Pose Animation

NOW ADD THE PASSING POSITIONS & THE "BREAKDOWNS"

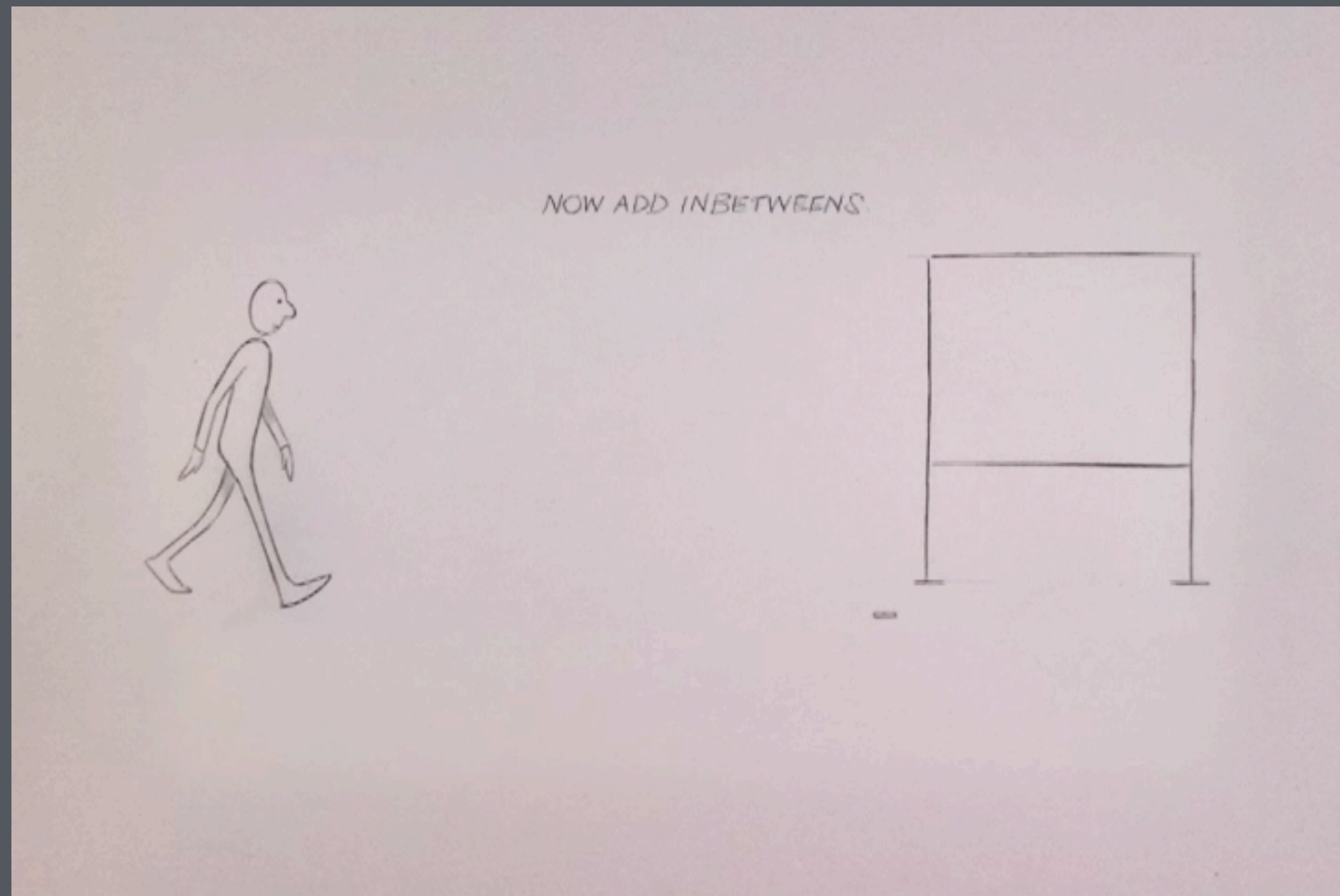KEY   KEY   KEY
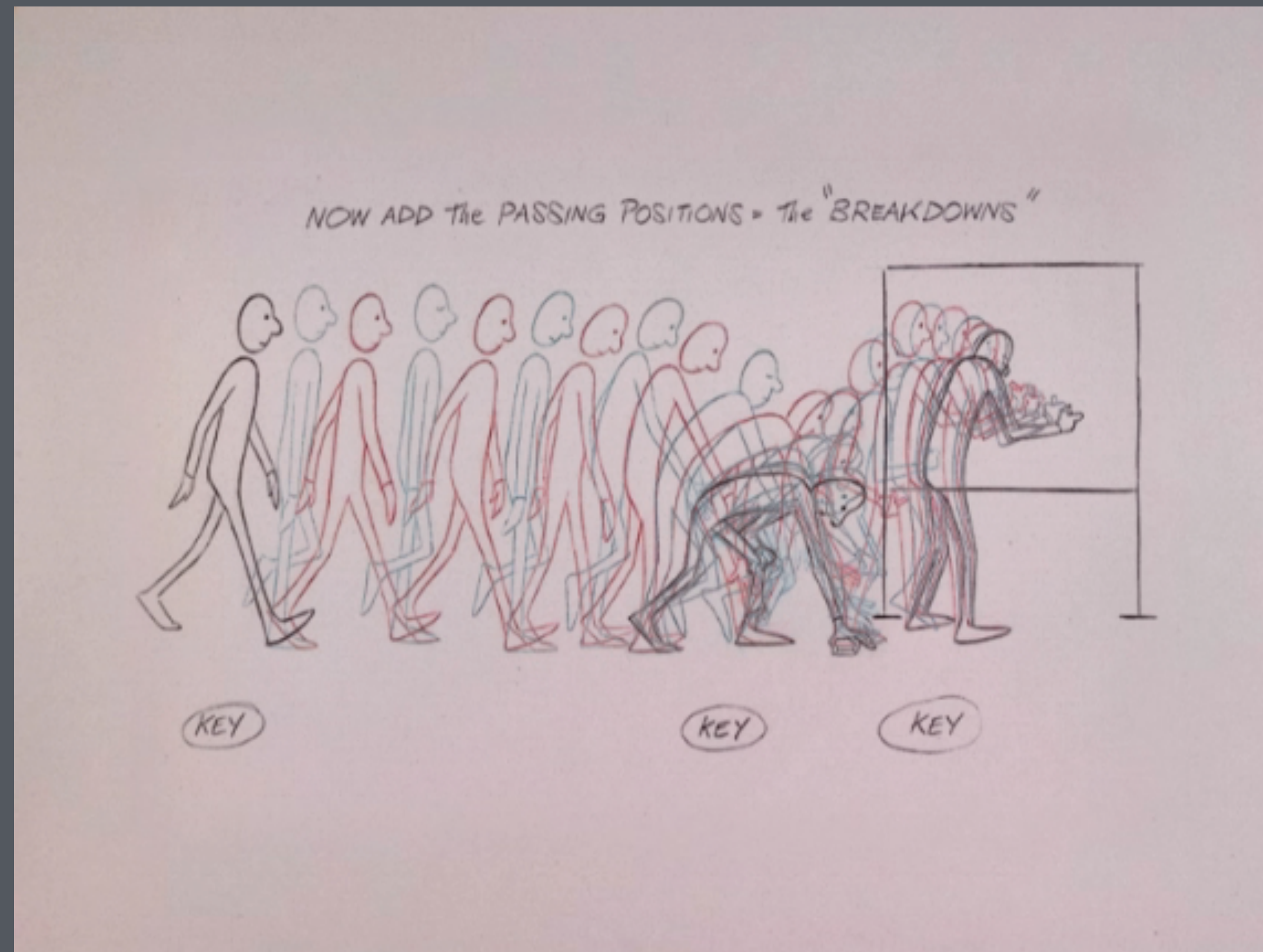
Added Passing Positions

Pose to Pose Animation

Added In-Betweens