

Animation

Theory

What Is Animation?

- Animation: creating the illusion of change or movement
- Not the same as interaction (which is user-controlled)

Uses

- Show dynamic process in real time
- Show variation of a value over time
- Navigate a virtual space
- Draw user's attention
- Indicate UI activity (folder opening, waiting)

Reasons to Use

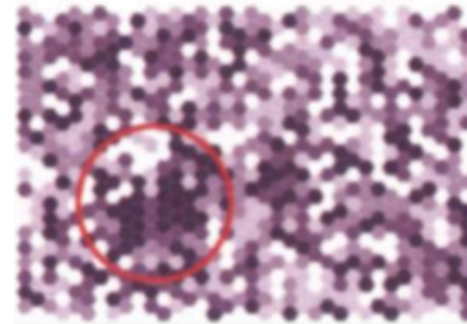
- It's engaging
- It can represent another dimension (time)
- It focuses attention powerfully
- It can help the user retain context

Reasons Not to Use

- It's flashy
- It requires replaying for analysis
- It draws attention powerfully
- It may add to cognitive load

Does Animation Help?

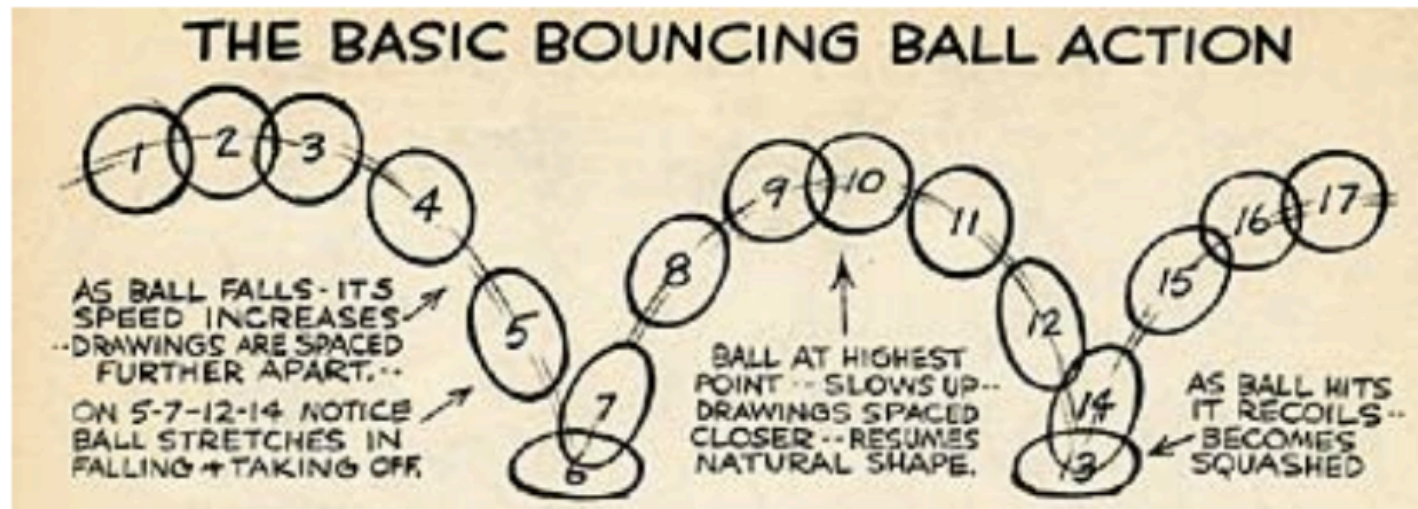
- No clear advantage over series of stills (Twersky, Morrison, and Betrancourt, 2002)
- Can help users find correct answers faster (Griffin et al., 2006)
- Compared to static maps, can help with time or attribute properties more than spatial ones (Lobben, 2008)



Practicalities

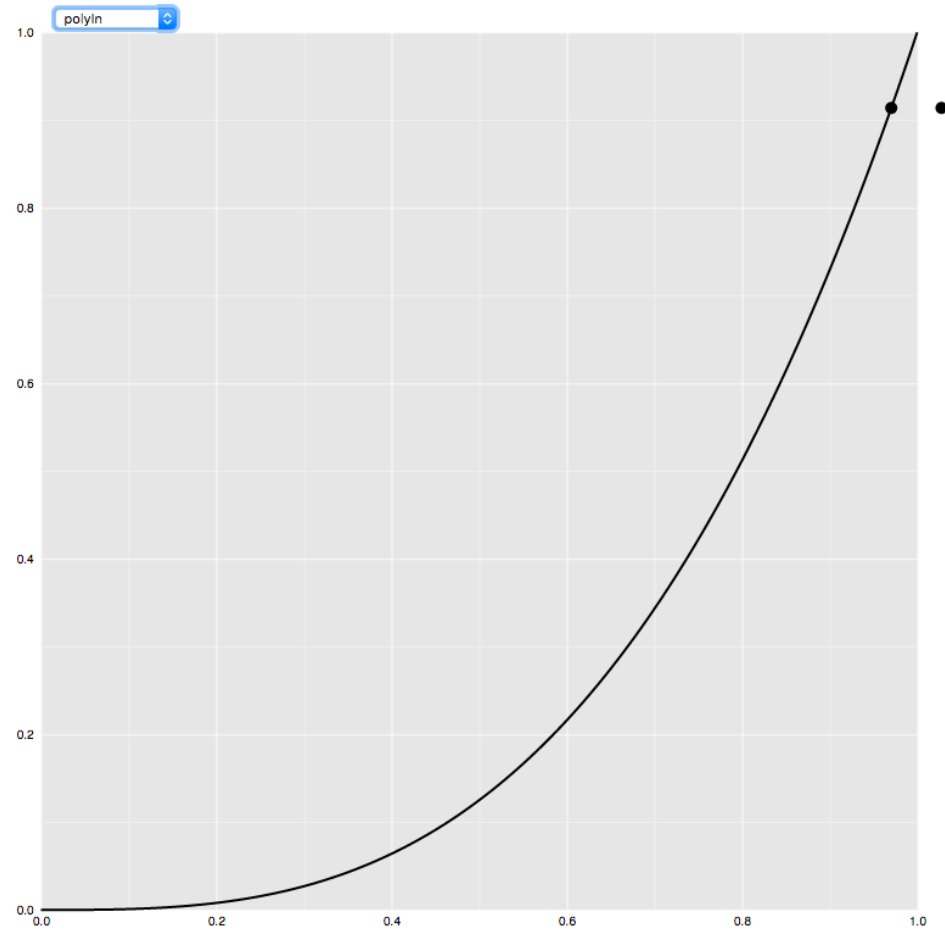
Animation Principles

- Replace sudden transitions with smooth ones. (d3.transition() does this well.)
- Fiddle with solidity
- Exaggerate change (d3's .ease() options)



Try it Out

Play with these examples of easing in d3 to get a feel for what they do.



<http://bl.ocks.org/mbostock/248bac3b8e354a9103c4>

Animation in Visualization

- Change one thing at a time
 - Use staging if need to change more at once
- Avoid radical changes
 - Don't animate hard-to-follow changes
- Avoid unnecessary motion
 - Excess motion is confusing
 - What is constant shouldn't move

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