

# The thesis lightning talk by Adam Vojtech

# Hello there!

I would like to show you a quick rundown of my bachelor thesis. Since I will be postponing my graduation, I would like to tell you atleast a bit about my theoretical part, this part is already done and ready. The topic for my bachelor thesis is **modern technologies used for 2D animation**.

# Overview

- ★ **Introduction to 2D animation**
- ★ **Traditional vs. Digital Animation**
- ★ **Digital Drawing Tablets**
- ★ **Software Tools**
- ★ **12 principles of animation**
- ★ **Integration of 3D elements**

# Introduction to 2D animation

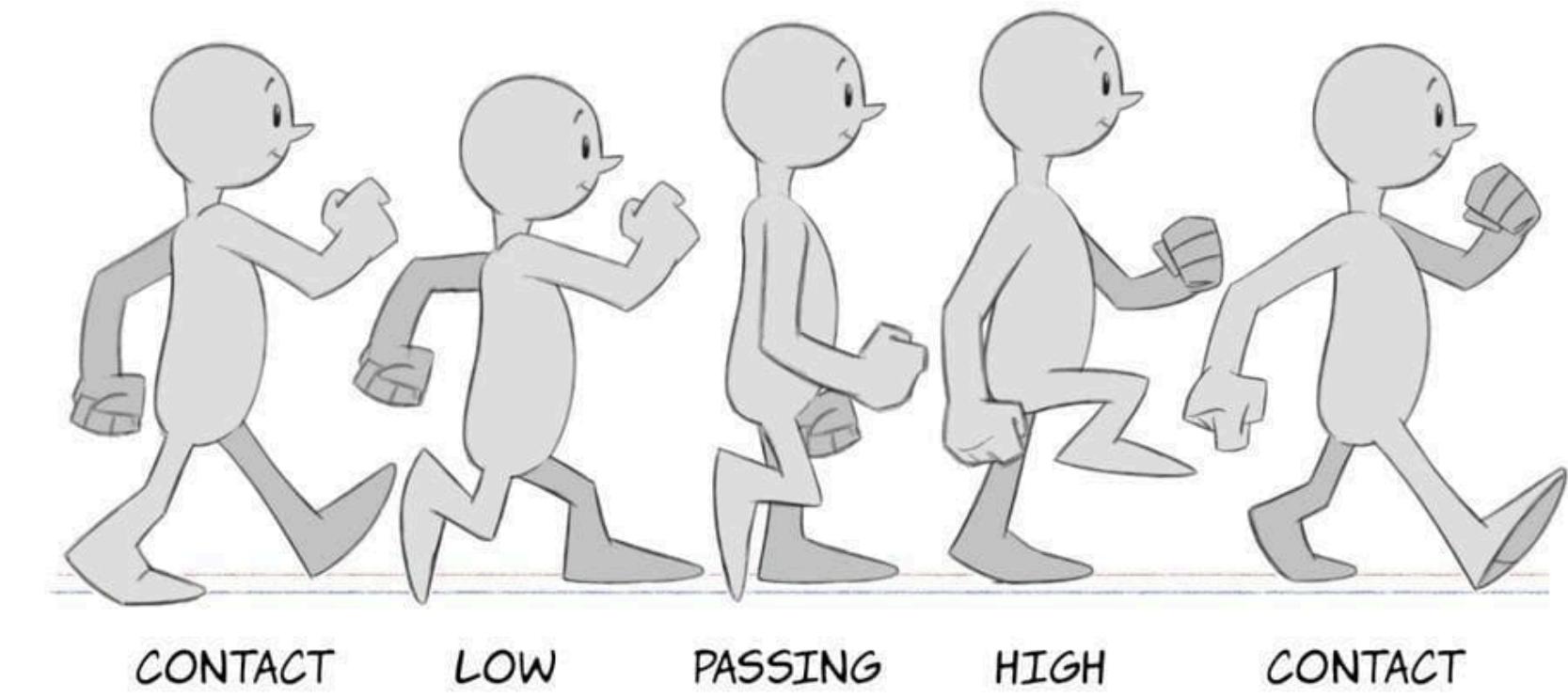
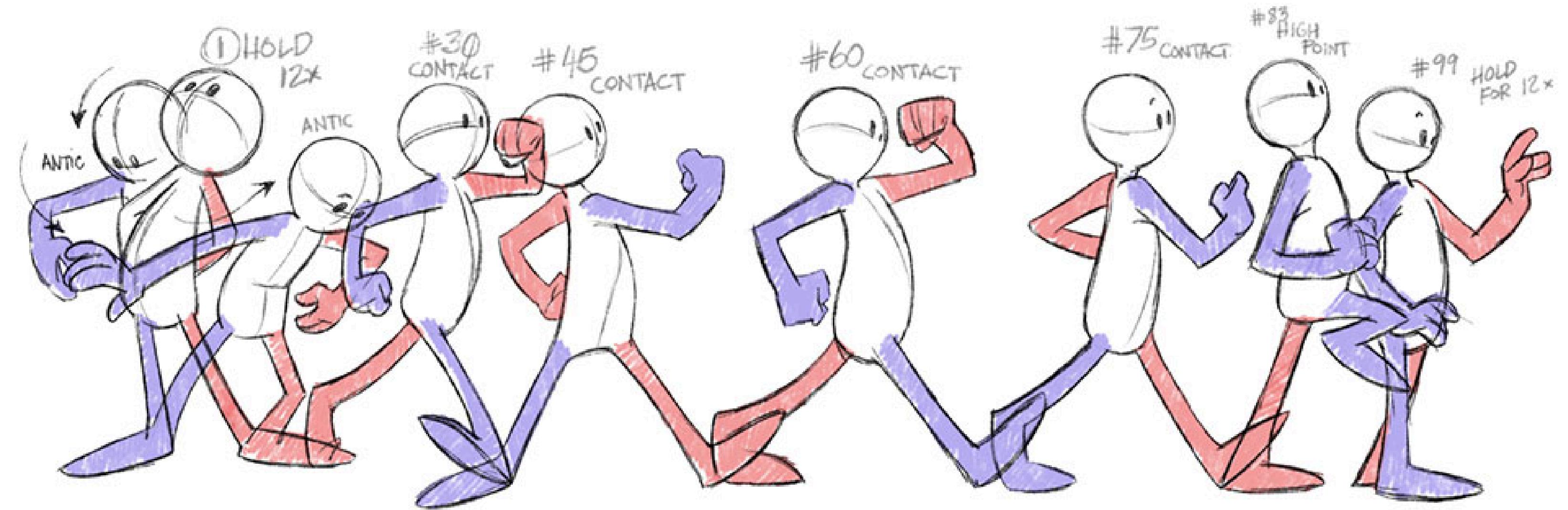
The basic definition of 2D animation consists of animation techniques that are created in only two dimensions, the x and y axes.

Illusion for the human eye

one second is divided into 24 frames

**WHAT IS 2D ANIMATION ?**





# Traditional vs. Digital

## Traditional

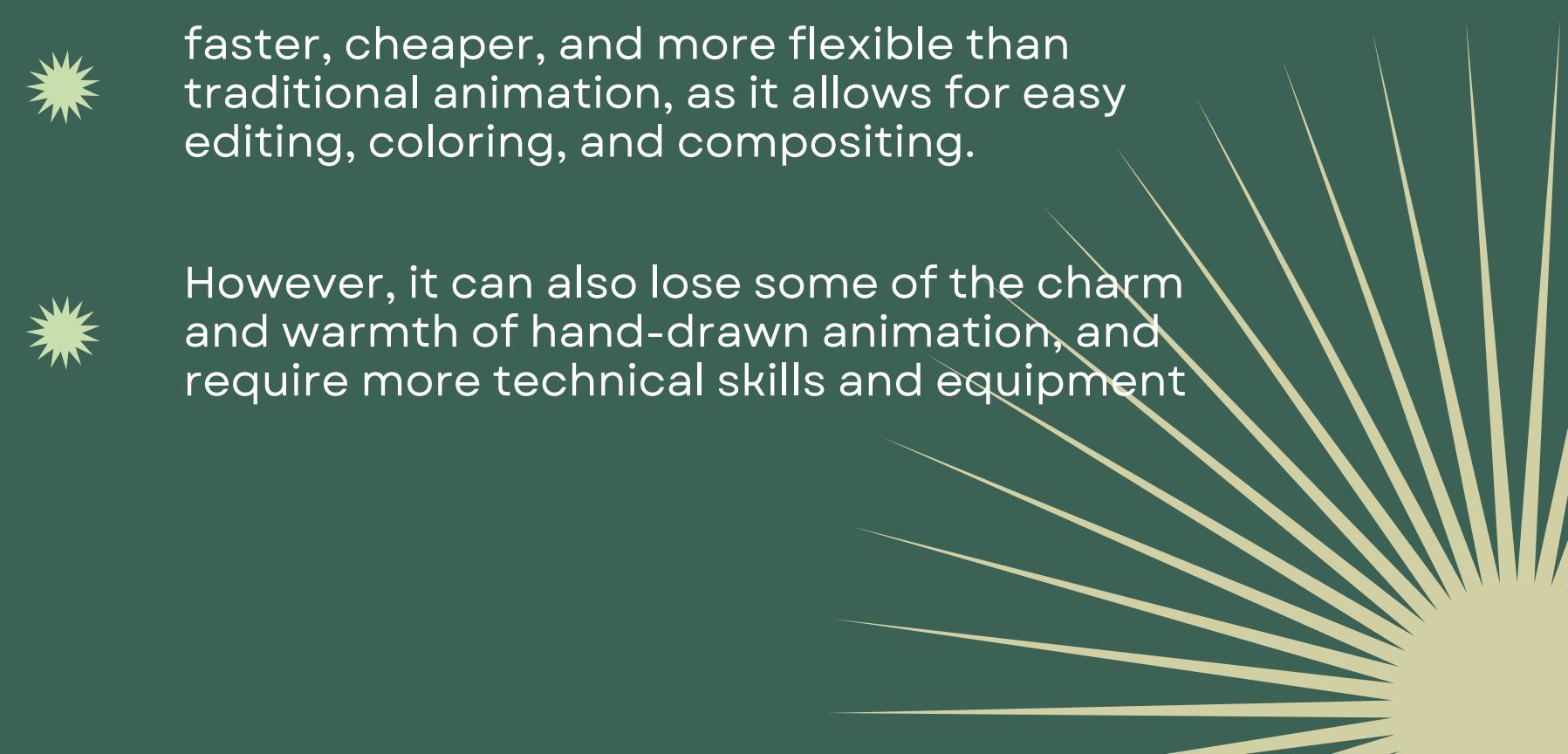
- each frame is drawn by hand
- dominant technique in the cinema industry till the end of the 20th century
- also known as cel animation

## Digital

- animation that uses computer software + specialized digital tablets

- faster, cheaper, and more flexible than traditional animation, as it allows for easy editing, coloring, and compositing.

- However, it can also lose some of the charm and warmth of hand-drawn animation, and require more technical skills and equipment



# Xencelabs Pen Tablet Medium Bundle

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The best tablet for animation for value for money

## SPECIFICATIONS

**Drawing area:** 262 × 147 mm  
**Screen resolution:** n/a  
**Pen pressure sensitivity:** 8,192 levels  
**Connections:** USB-C to USB-A

## REASONS TO BUY

- + Great balance of features and price
- + Superb Pen options

## REASONS TO AVOID

- Not UHD
- No built-in ExpressKeys



# Apple iPad Pro 12.9-inch (M2, 2022)

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## SPECIFICATIONS

Drawing area: 262 x 196 mm

Screen resolution: 2,732 x 2,048 pixels

Pen pressure sensitivity: Not specified

Connections: Lightning, Bluetooth, Wi-Fi

## REASONS TO BUY

- +Amazing processing performance
- +Gorgeous liquid retina display
- +Fantastic compatibility with Apple Pencil

## REASONS TO AVOID

- Pricey, and Pencil costs extra



# Wacom MobileStudio Pro 16

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## SPECIFICATIONS

**Active drawing area:** 15.6 inch or 13.3 inch

**Resolution:** 3840 x 2160 (UHD)

**Pen pressure sensitivity:** 8,192 levels of pen pressure

**Connections:** Bluetooth 5.1, WiFi, x3 USB-C ports,

**Thunderbolt 3**, SD card

**OS:** Windows

## REASONS TO BUY

- + Clear 4K display
- + VFX software
- + Reliable build quality

## REASONS TO AVOID

- Heavy
- Short battery life



# Software tools

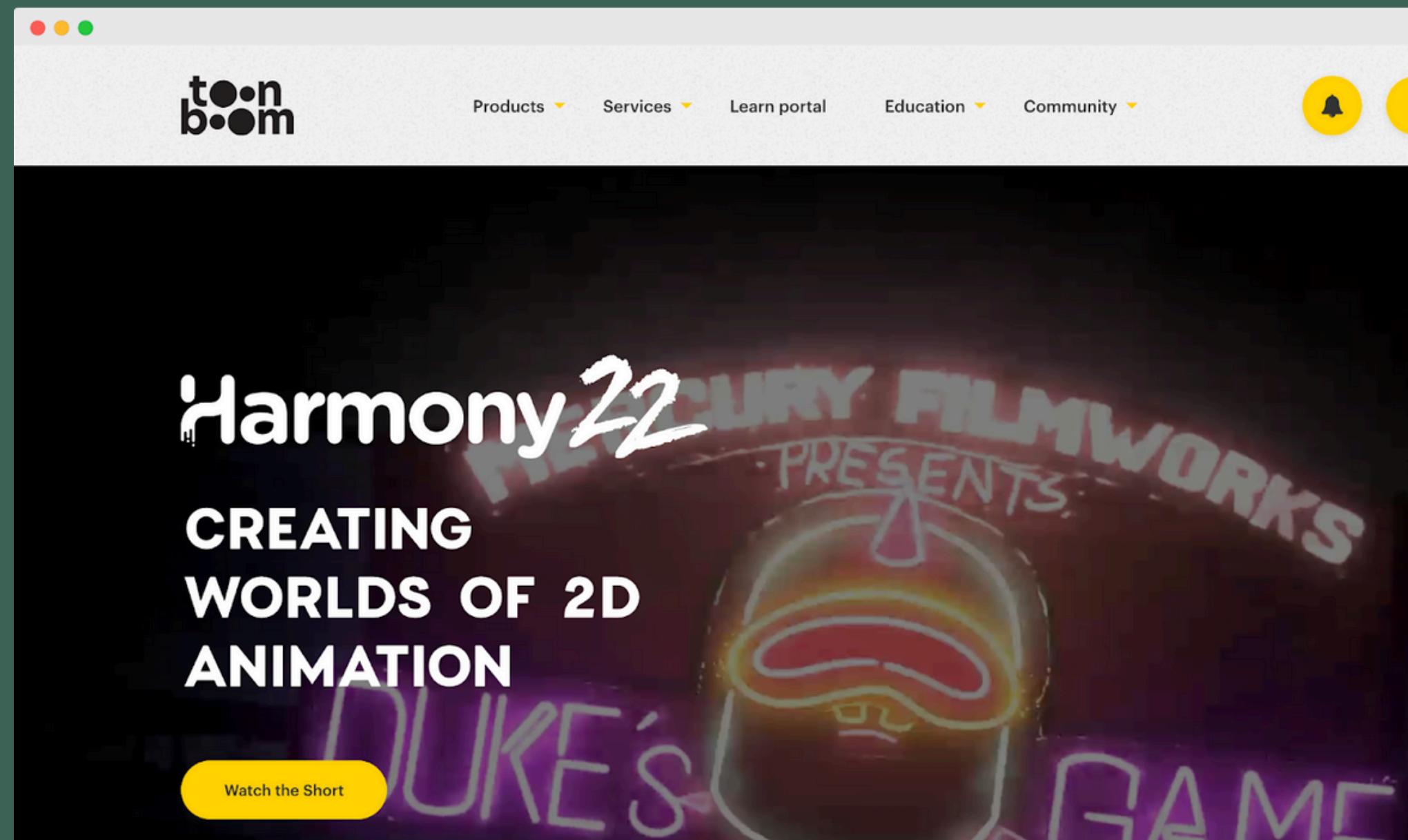
## TOON BOOM HARMONY

### key benefits:

- + industry leading tool
- + flexibility
- + realistic visuals
- + streamlined workflow
- + big community of support

- mastering this software might require more time
- system requirements
- considered more expensive than other softwares

industry standart



Harmony

# Software tools

## MOHO PRO

### key benefits:

- + user friendly
- + extensive learning resources
- + advanced features
- + vector animations
- + streamlined workflow

- larger initial investment
- moho's online community is much smaller
- smaller community - fewer external resources



A screenshot of the Moho Animation Software website. The header features a red bar with the text "FREE Shipping to USA on all physical packages" and navigation links for "ABOUT", "FORUM", "SUPPORT", "CONTACT", "CART", and social media icons. Below the header is a large banner image of a stylized, colorful character with a flame-like appearance. To the right of the banner, there is promotional text: "THE FUTURE IS 2D", "Moho Animation Software provides professional, powerful and easy to use rigging and animation tools. Just draw directly in Moho or import your artwork from any other app. Moho will give you easier and faster results with the quality you are looking for.", and "Unlock your creativity and discover that the future is 2D!". At the bottom right, there is a video player showing a preview of "Moho 14. The future is 2D!" and a link to "mohoanimation.com".

# Software tools

## ADOBE ANIMATE

### key benefits:

- + powerful rigging tools
- + seamless adobe integration
- + interactive animations
- + versatile toolset

- requires dedicated learning time
- + tons of resources and support



A screenshot of the Adobe Animate website. The top navigation bar includes the Adobe logo, 'Creativity &amp; Design' dropdown, 'Animate' (which is highlighted), 'What's New', 'Learn &amp; Support', 'Free trial', and a 'Buy now' button. Below the navigation is a breadcrumb trail: 'Home / Adobe Creative Cloud / Adobe Animate'. The main content area features a large yellow cartoon character wearing sunglasses and a black cap, with the text 'An' in a white box above it. The headline reads 'A new age for animation.' Subtext below states 'Design animations for cartoons, banners, games, and the web with Animate. Plans starting at US\$22.99/mo.' At the bottom are 'Free trial' and 'Buy now' buttons.

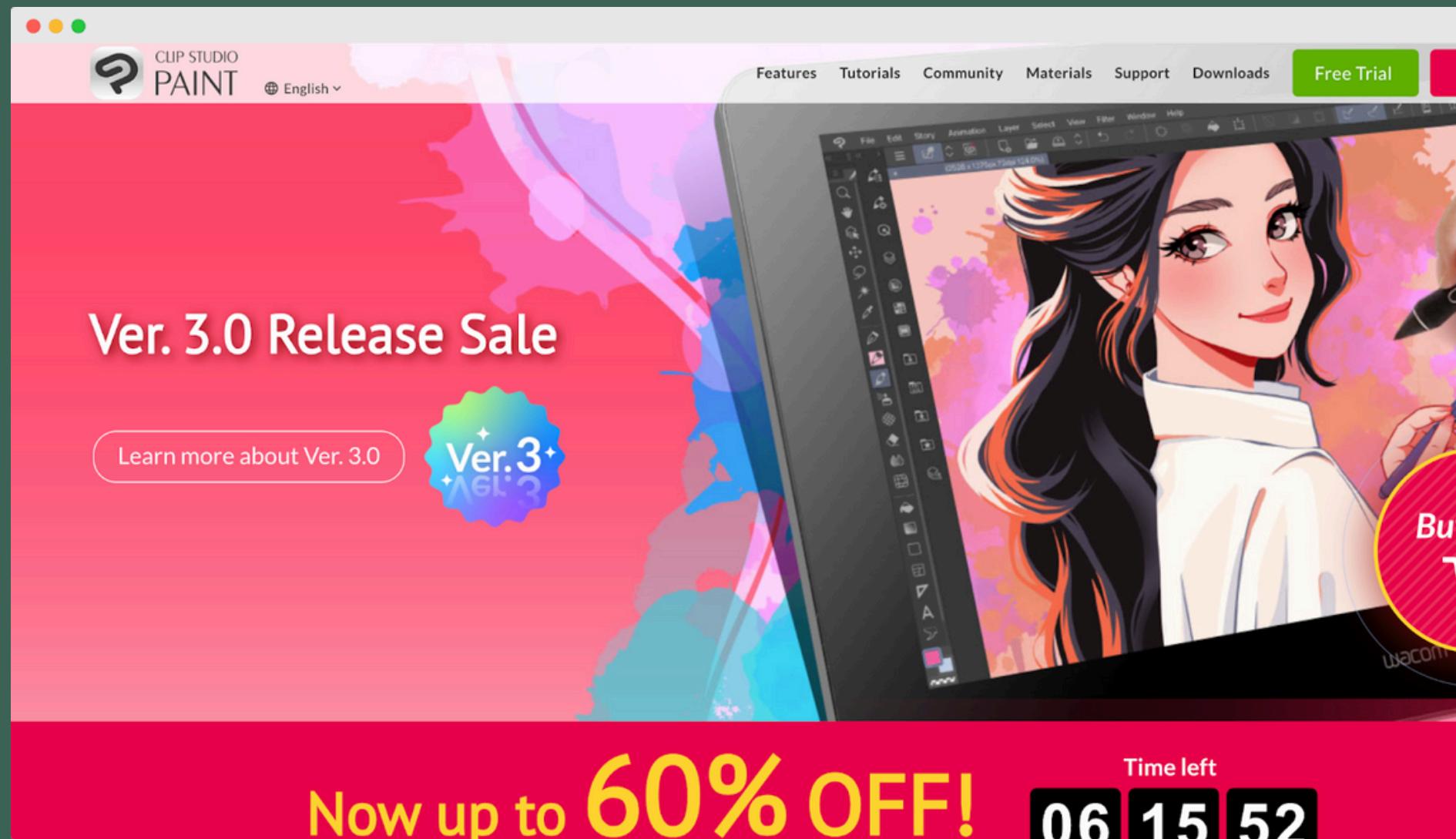
# Software tools

## CLIP STUDIO PAINT

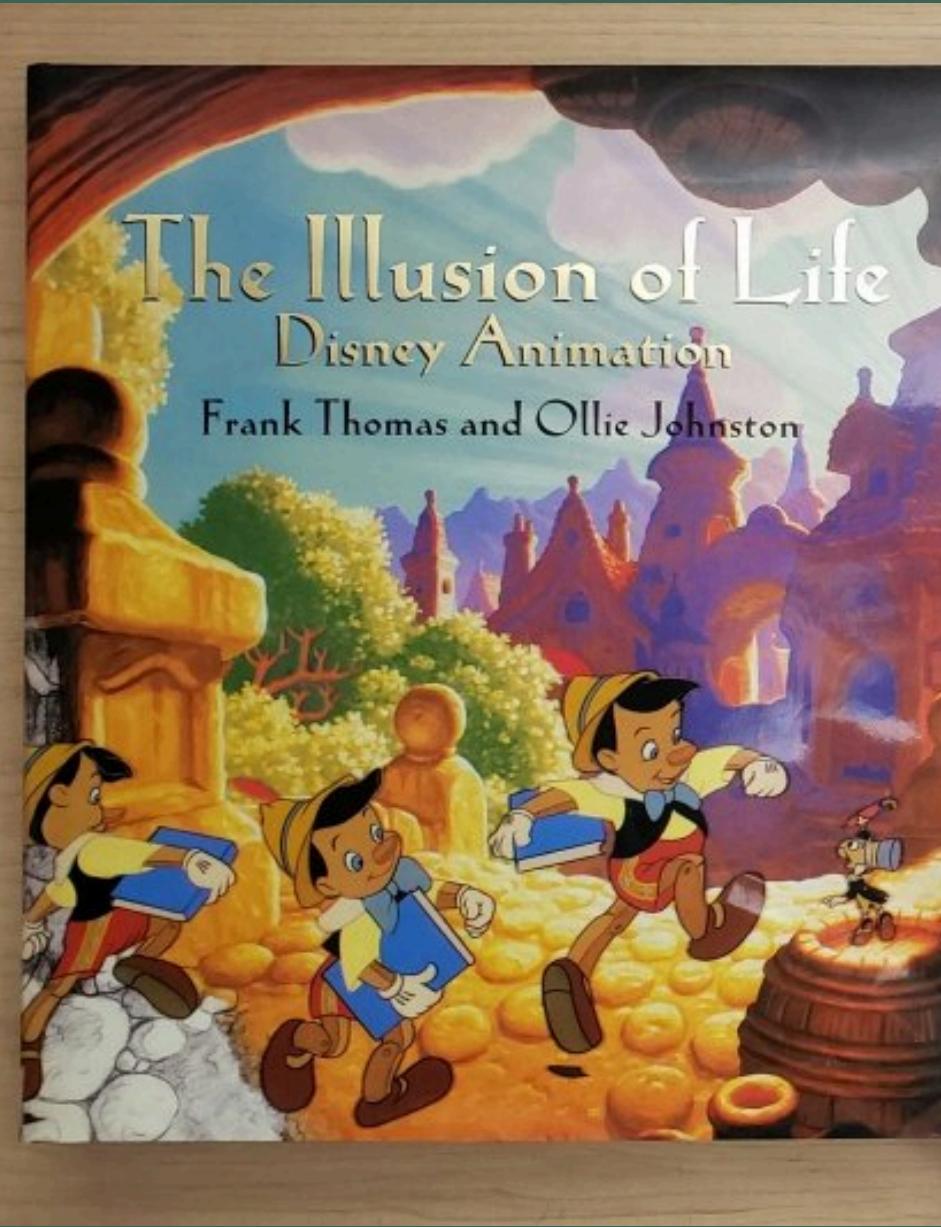
### key benefits:

- + a large variety of brushes
- + intuitive interface
- + extensive material library
- + smart coloring tools
- + non-destructive editing

- its full potential is locked behind paid subscriptions or a one-time purchase.  
- some advanced features might take longer to learn

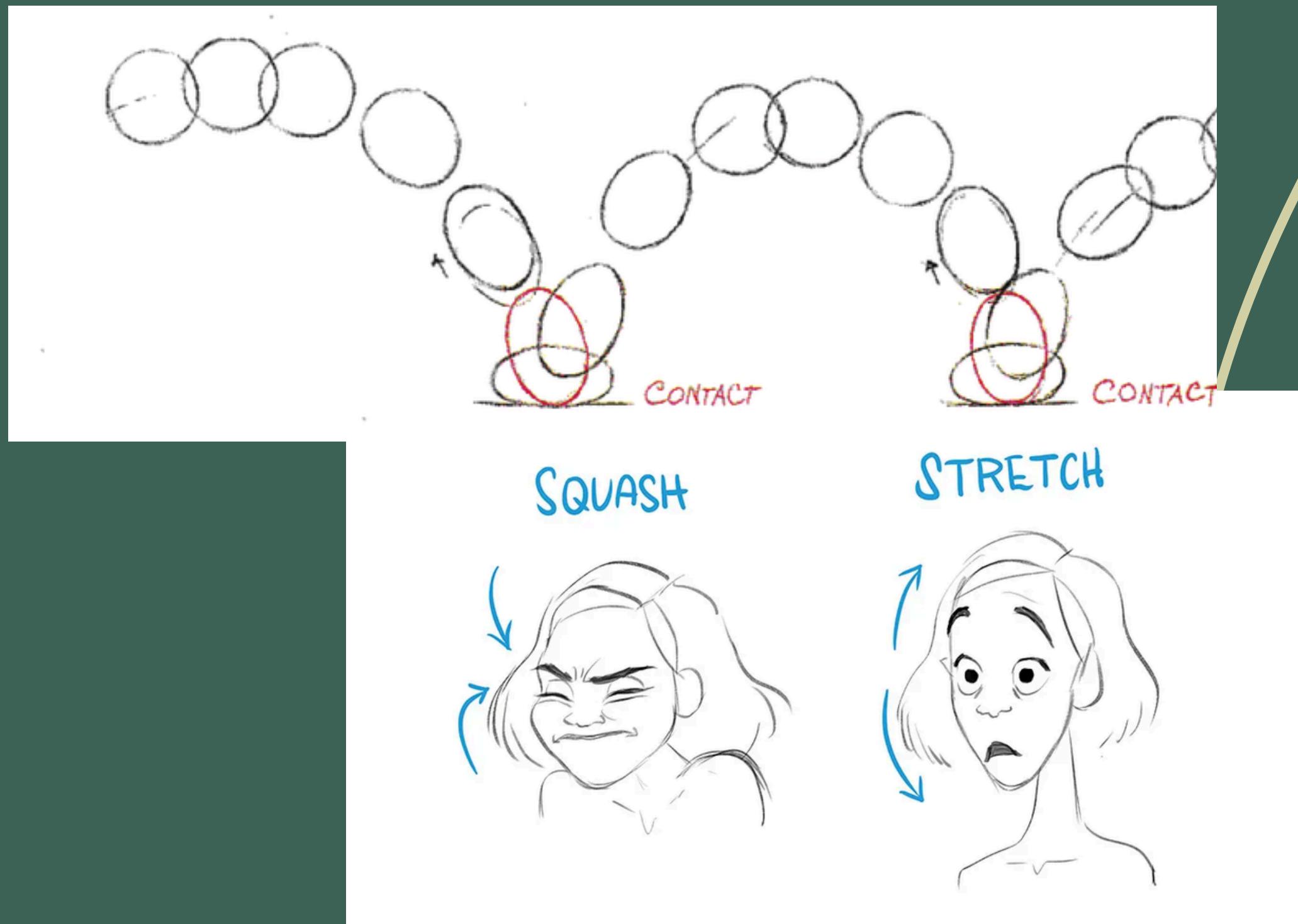


# 12 principles of animation



1

## Squash and Stretch



# 12 principles of animation

2

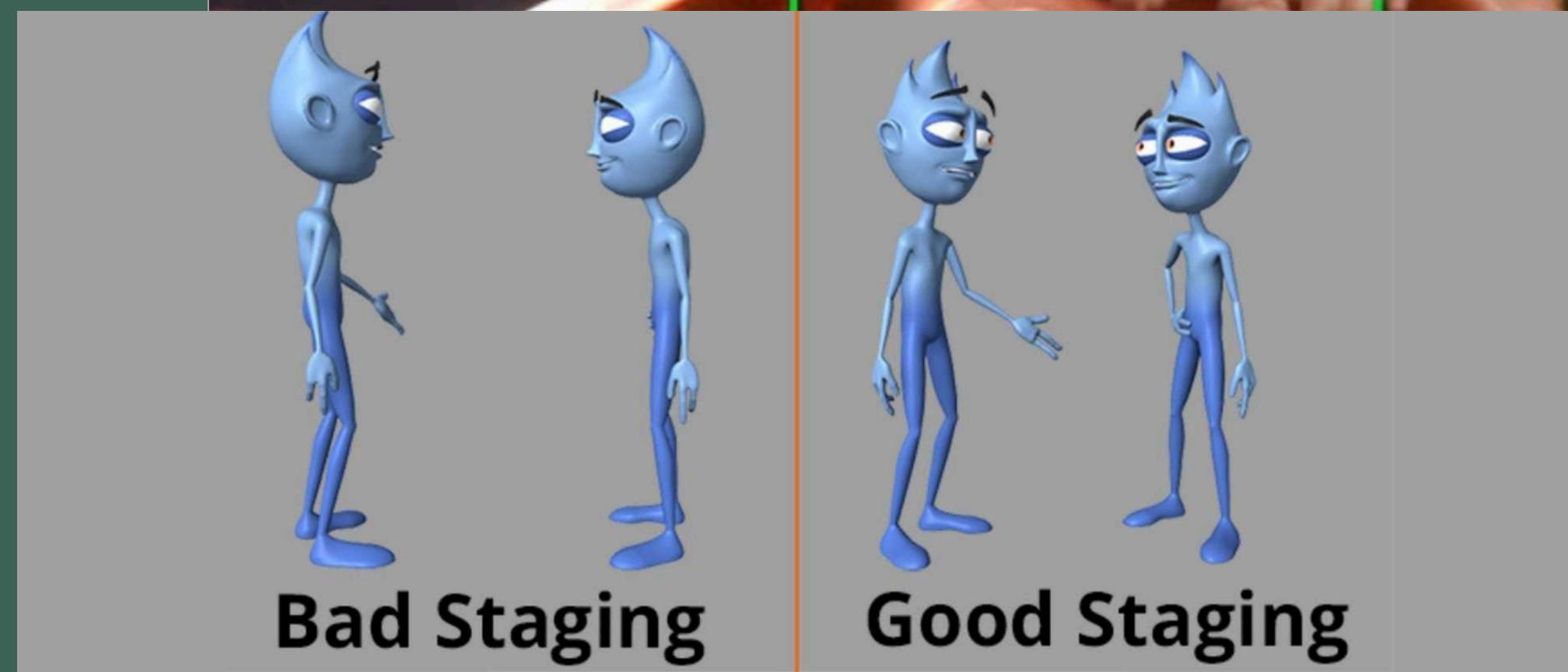
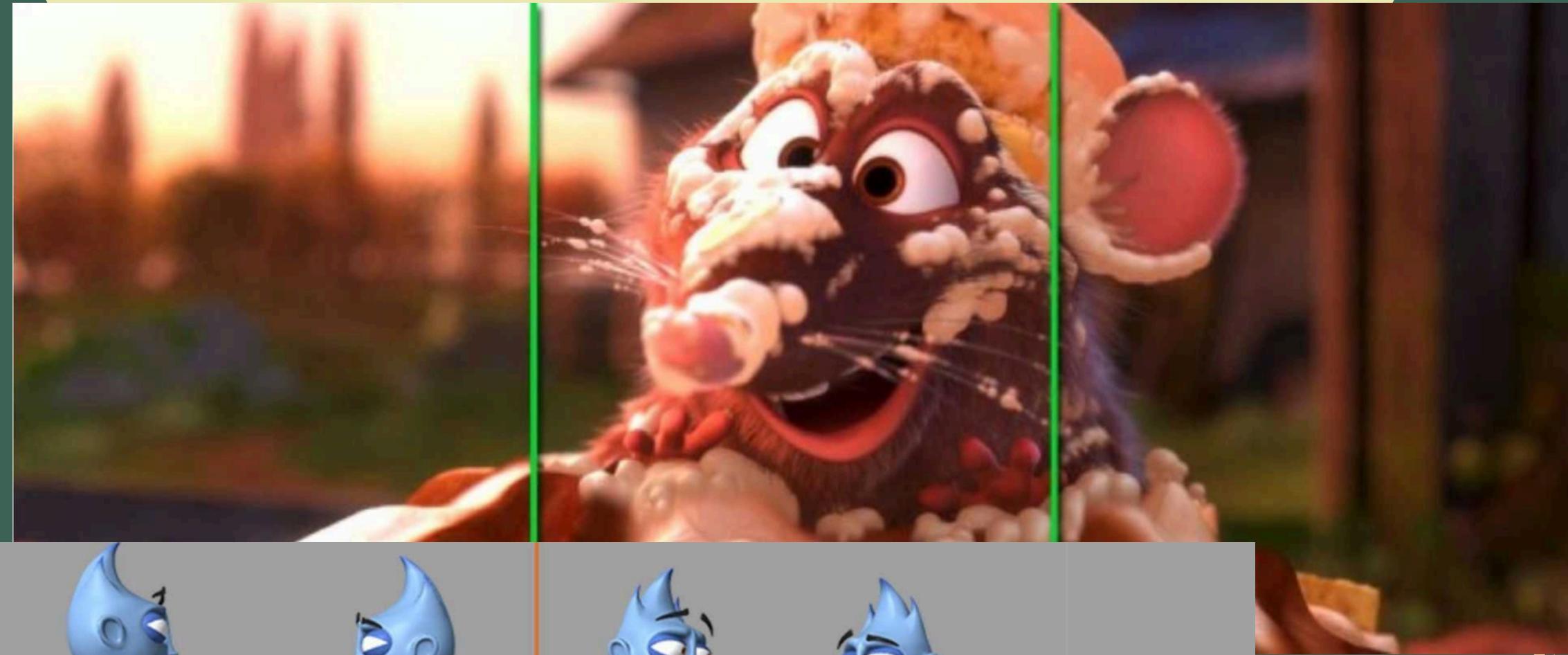
## Anticipation



# 12 principles of animation

3

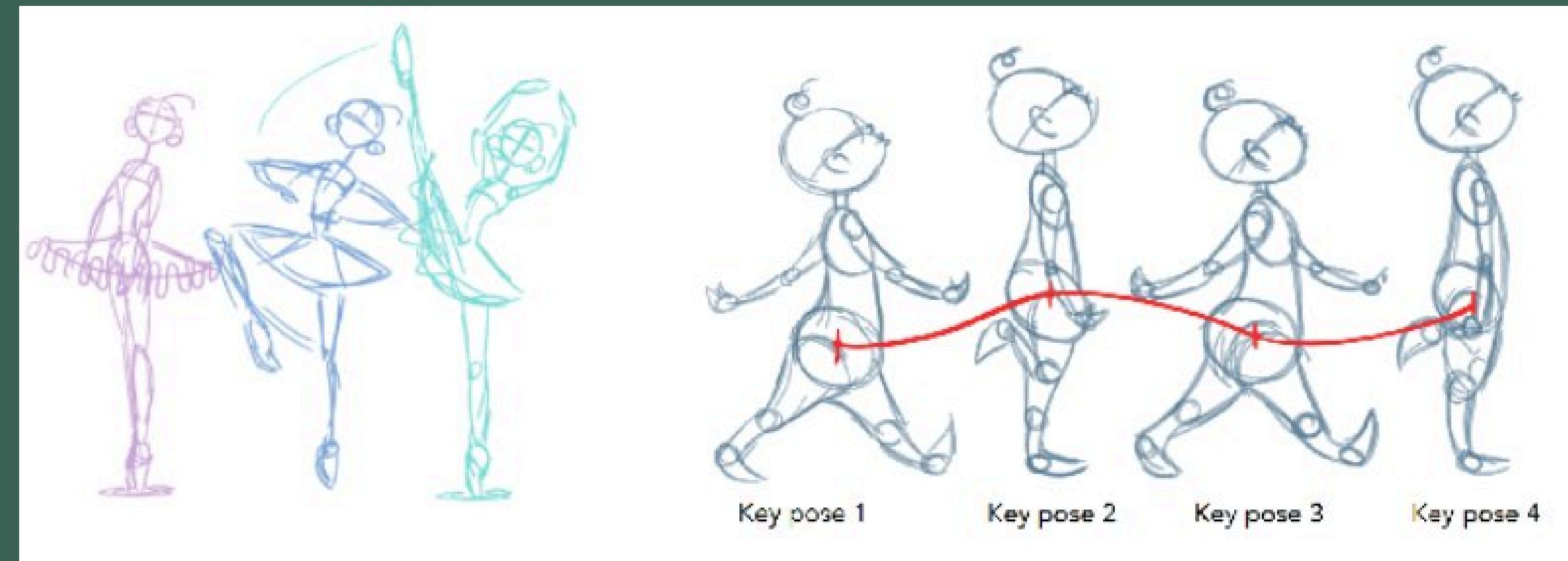
## Staging



# 12 principles of animation

4

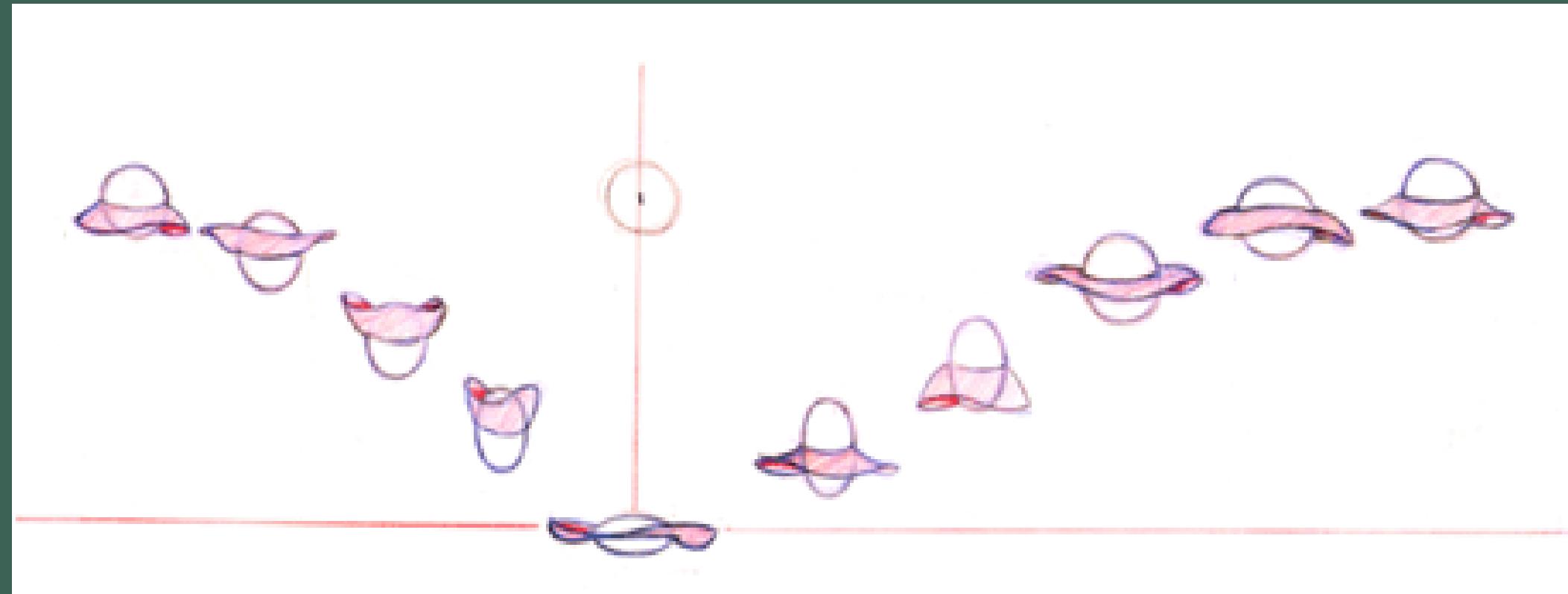
## Straight Ahead Action and Pose to Pose



# 12 principles of animation

5

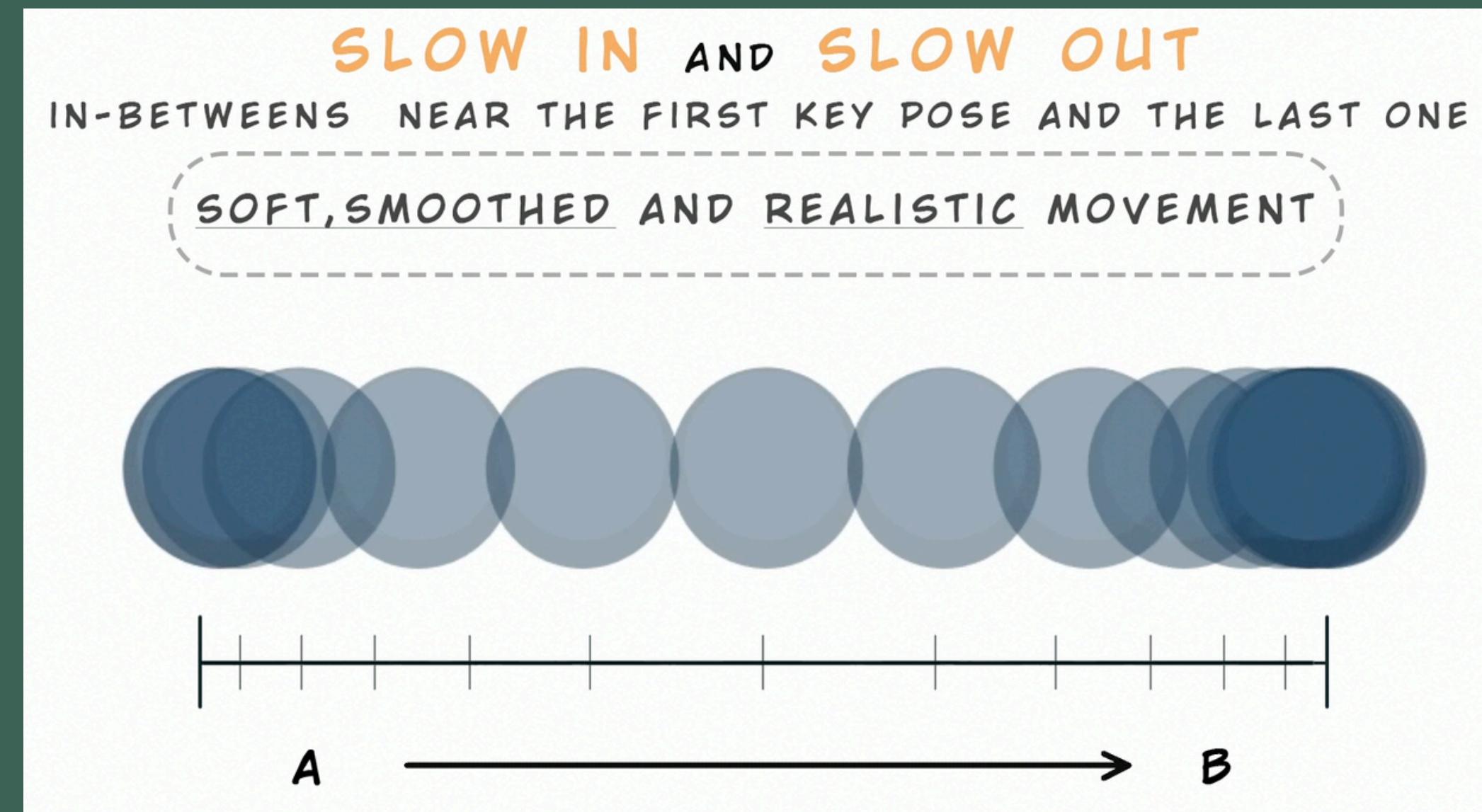
## Follow Through and Overlapping Action



# 12 principles of animation

6

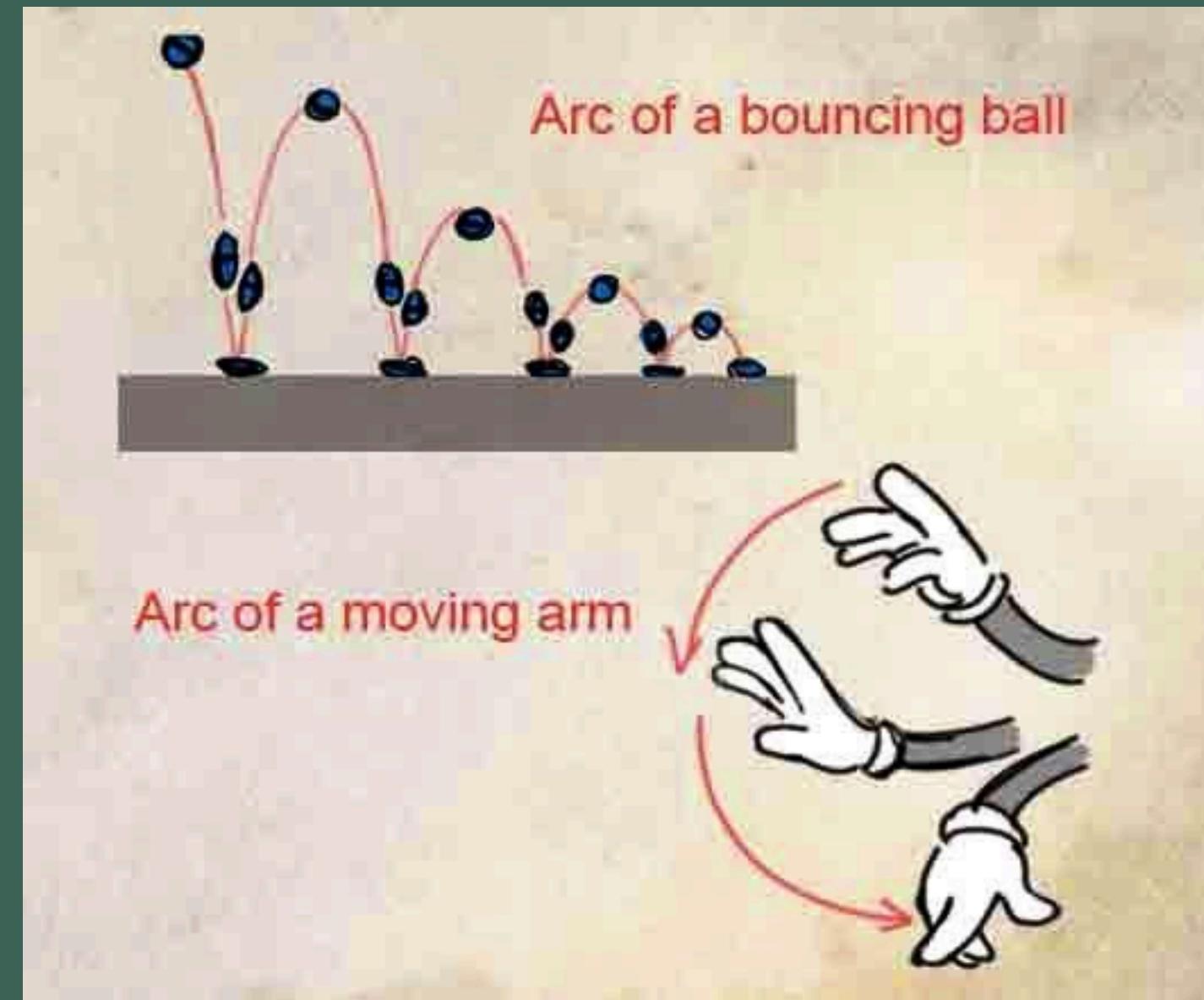
## Slow In and Slow Out



# 12 principles of animation

7

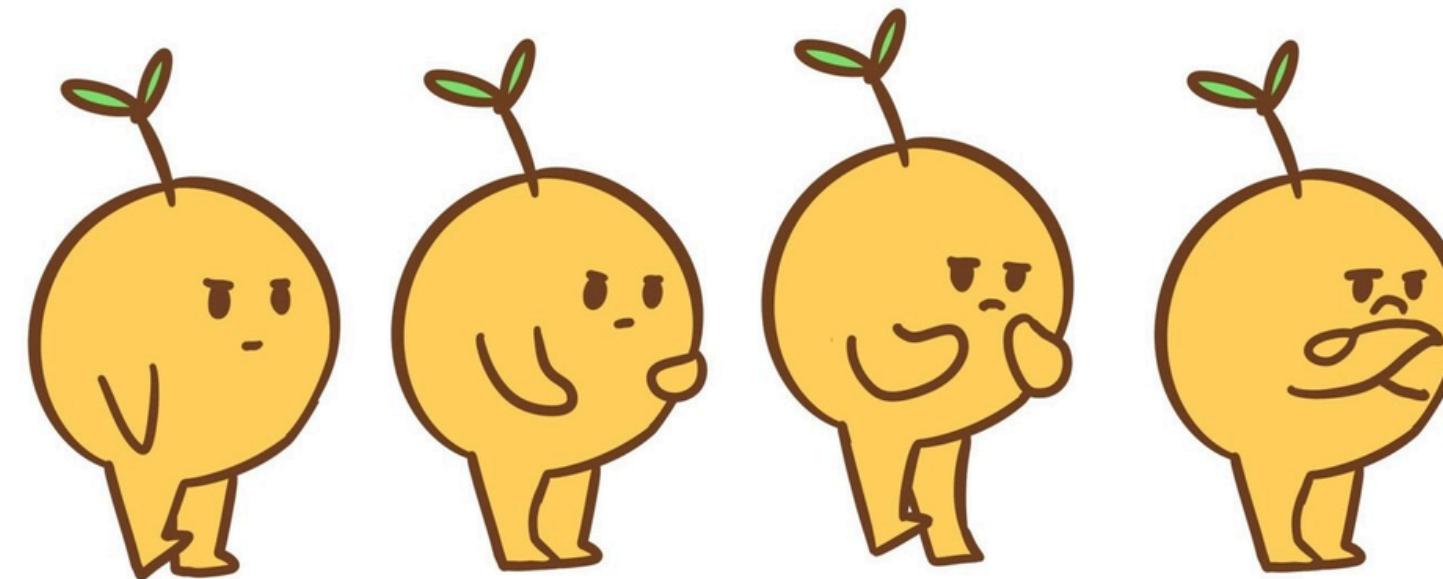
## Arc



# 12 Principles of animation

8

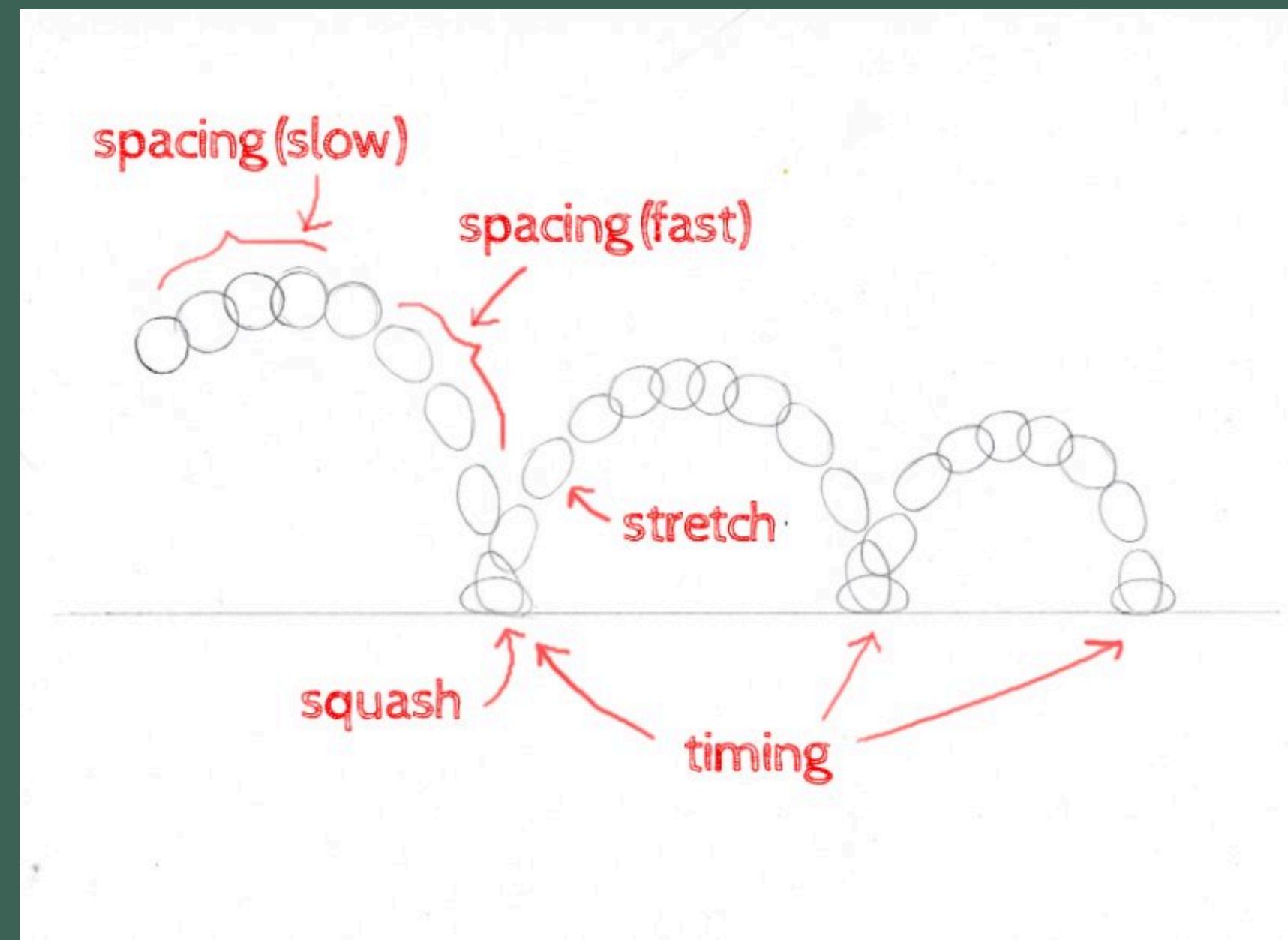
## Secondary Action



# 12 principles of animation

9

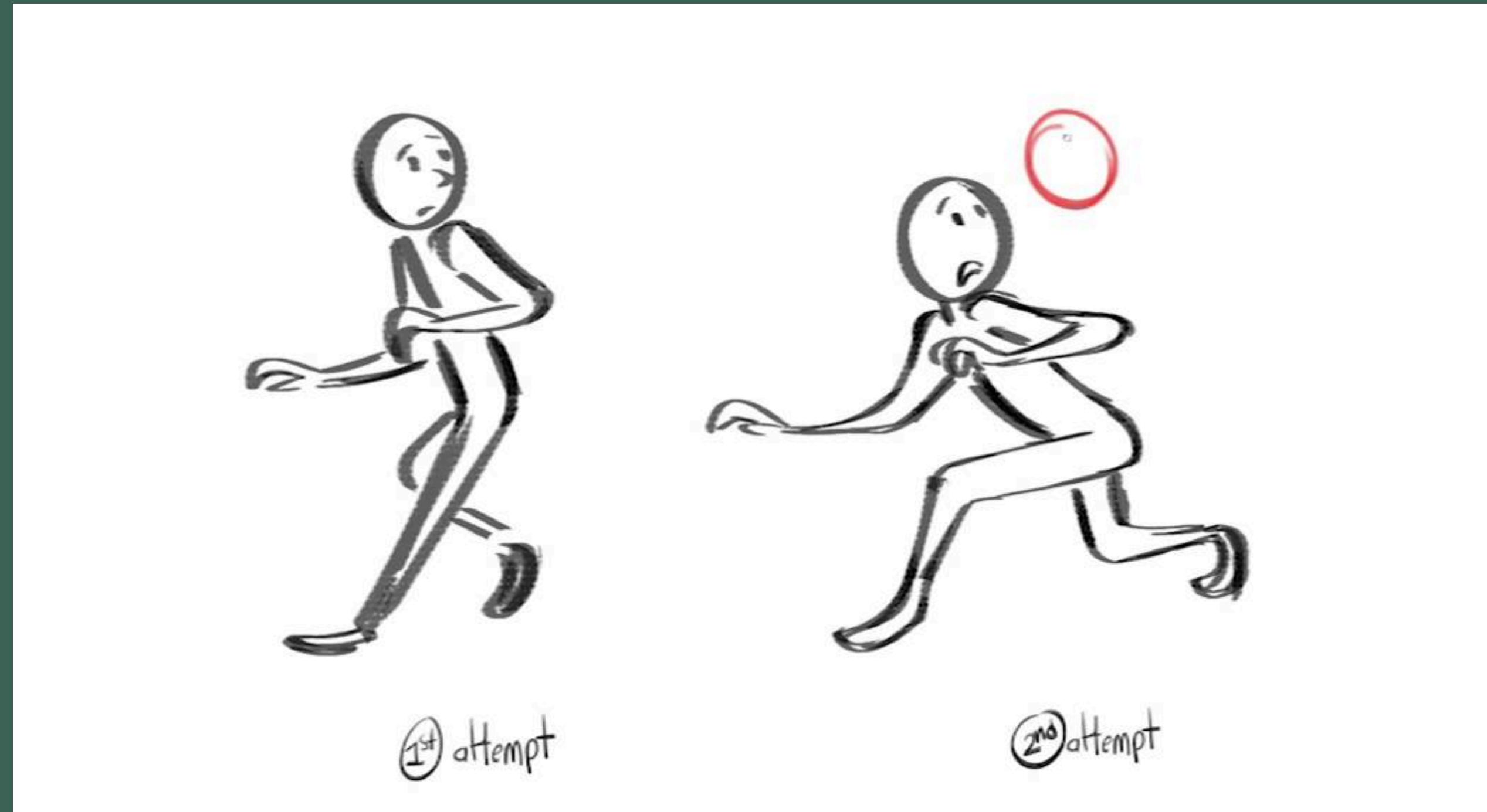
## Timing



# 12 principles of animation

10

## Exaggeration



# 12 principles of animation

11

## Solid drawing



# 12 principles of animation

12

## Appeal



## APPEAL



**"APPEAL IS THE PLEASING AND FASCINATING  
QUALITY THAT MAKES A PERSON ENJOY WHAT  
THEY ARE WATCHING"**

- THE ILLUSION OF LIFE - PAGE 68

# Integration of 3D elements

Hybrid animation is, in simple terms, the integration of 2D and 3D animation. This combination of different techniques allows you to take advantage of the benefits of each technique, and thus create a better animation. keep you text left aligned

Hybrid animation allows you to combine the advantages of 2D and 3D.

A great example of combining 2D and 3D animation for a better end result is the animated series “Arcane” (2019). Based on the computer game by Riot Games – French animation studio Fortiche Productions was co-developer of the series.

More than 80 animators worked on the animations. It mixed different styles and techniques including 2D and 3D animation. The characters and some of the effects are animated in 3D. On the other side, 2D was used to give texture to specific elements. Therefore, water, smoke, fire or dust were shown in 2D. The background of the animation was also in 2D.



Thank  
You



Presentation by **Adam Vojtech**