

Powerful and Effective Animation for 2D/3D Games

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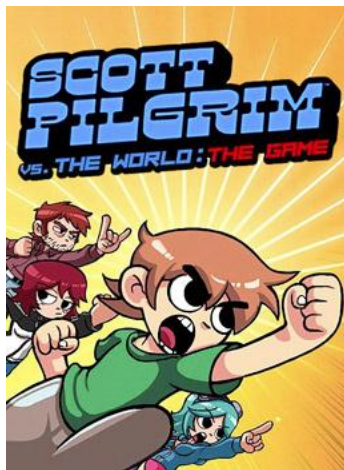
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Overview

- Animation principles
- How it relates to gameplay
- Putting it together
- Reviewing Skullgirls
- Takeaways

Who am I?



WayForward

revenge
LABS

lab zero™
G A M E S

Skullgirls?



- 2D animated fighting game for PSN/XBLA/Steam
- All hand drawn by a team of traditional animators

Animation Principles

Silhouette



- Clear silhouette in your keys is the basis of making strong animation

Silhouette



- In 3D it gets a little harder because of the camera, but strong poses are still important

Super Mario 3D World

Anticipation



- Even one frame of anticipation is enough
- Gives the move contrast to make it look more powerful

Anticipation



- Anticipation applies the same way in 3D

Punch-Out!!

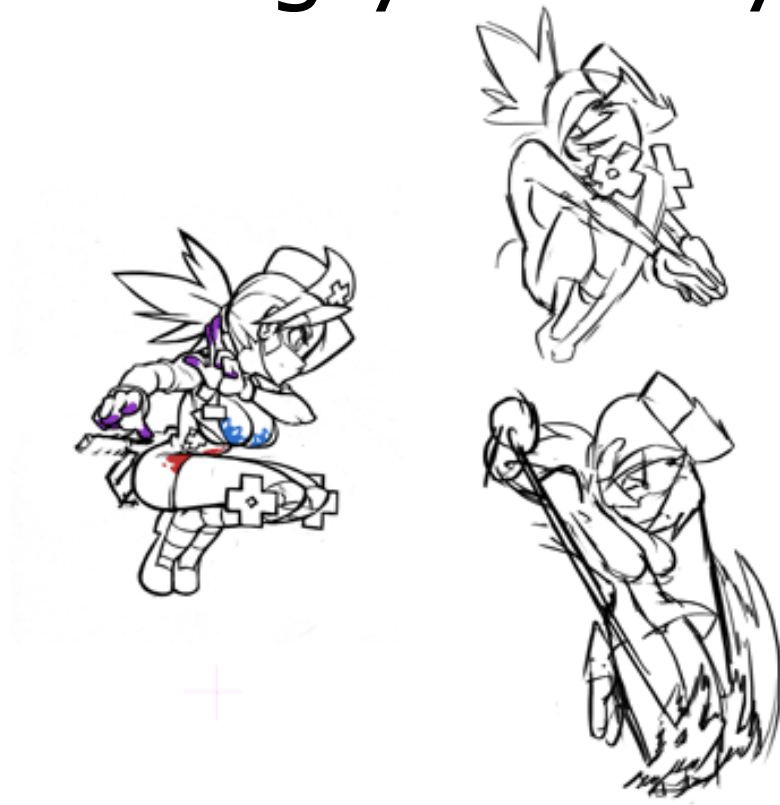
A note about anticipation

- Player characters generally need to move quicker than enemies to be responsive, so you might not have time for much anticipation

(That being said, you should always have time for some)

- Enemy characters generally need to give the player time to react, so they need more anticipation

Favoring your Keys



- In situations where you have limited frames, having inbetweens that emphasize your keys is important

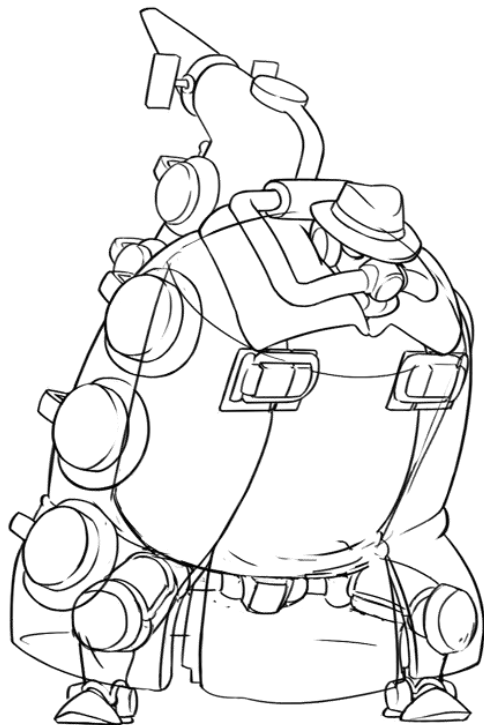
Favoring your Keys



- Same thing in 3D: quick animation, emphasize key pose

Naruto Shippuden:
Ultimate Ninja Storm 3

Followthrough



- Use followthrough effectively to help fill in the gaps where you may not have time for inbetweens

Followthrough



- Even if the followthrough is procedural, you can try to drive it with the poses you hit

Journey

Smears



- Smears also help fill in the gaps when you need to have a huge motion

Smears



Chun-Li from Street Fighter
III: Third Strike



Ibuki from Street
Fighter III: Third Strike



Captain America from
Marvel vs. Capcom

Smears



Metal Gear Rising: Revengeance

- The look of your smears in 3D will be dictated by your game, but don't forget their importance

Overshoot



- One frame of an attack 'overshooting' its final key frame helps give it impact

Overshoot



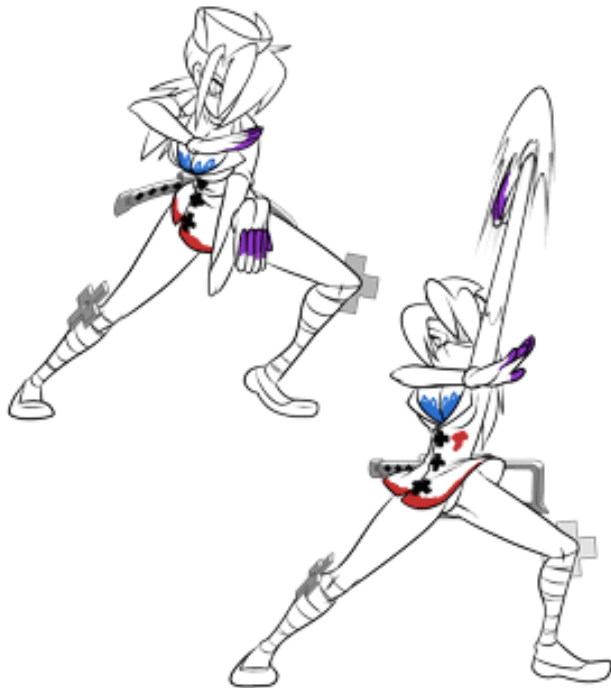
- Street Fighter III: Third Strike has a lot of great examples of overshoot, including this example with Makoto

Overshoot



Super Smash Bros. 3DS

Breaking the body



- Don't be afraid to break limbs to push your animation
- A frame of delay helps give your animation strength

Breaking the body



Felicia from Darkstalkers



Necro from Street Fighter
III: Third Strike



Sol Badguy from
Guilty Gear

Breaking the body



Dead or Alive 5

Remember, you're animating!

- Animation is the impression of creating a motion
- Remember your foundations, but push, exaggerate, and break a few bones to make your animation look awesome
- You're creating movement, not individual pieces of art

Timing and Gameplay

The Skullgirls Process



Rough

>



Implement

>



Finish

> Implement



Know what you're making

- In Skullgirls, we have general framecount guidelines for weak, medium and hard moves when doing roughs, so we have a starting point
- Work with your designer to get an idea of what she needs, and start animating from there

Use holds effectively

- If your game allows it, don't feel beholden to animating with each frame held the same amount of time, e.g. holding every frame for 4 frames at 60fps (approximately animating on twos)
- Sometimes mixing up the timing to hold your keys and its surrounding frames longer can save you frames

Use holds effectively, example



Old timing at even intervals



New timing with holds emphasized

Hitstop

- Hitstop is the period on an impact where both characters freeze before playing the rest of the animations
- This is more programmatic and less an animation thing, but important nonetheless
- Not all games have or need it, but it's useful to consider

Hitstop



Street Fighter IV

Transitioning to and from idle

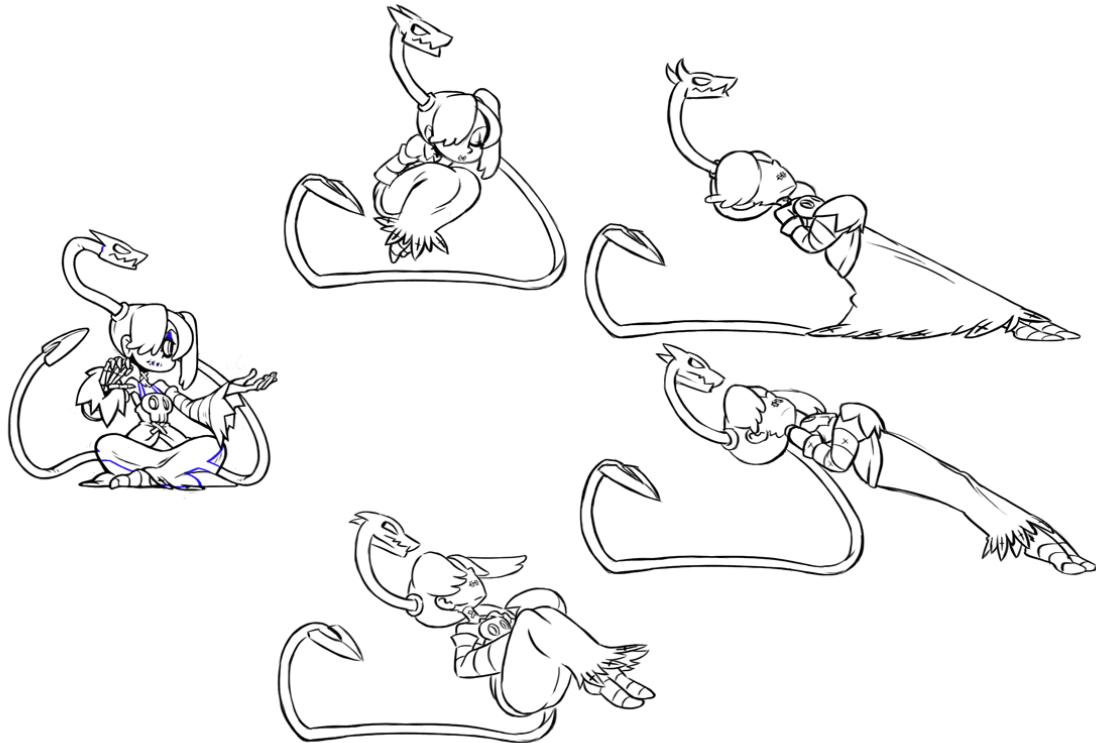
- Don't forget that your idle animation is a motion in itself, so don't ease in and out of your idle animation

Gameplay is king!

- Find ways to work with your designers, not against them
- Ask your designer questions!
- You may be able to animate the most fluid jump with a ton of anticipation and a beautiful landing, but it won't do your game any good if it doesn't work with the game

Putting it Together

Anticipation, smear, main key, return



- If you think of an attack in these parts, it doesn't actually take a lot of frames to get a motion across

Lessons from Skullgirls

Fluid vs Overanimated

- The animation in Skullgirls was always smooth, but I didn't know how to effectively apply the previous principles, resulting in animation with unnecessary frames in the beginning

Filia's 21 frame kneefall



- 21 frames- too many! Lots of unnecessary and redundant detail
- Animation is too even, lacks impact

Filia's 21 frame kneefall, fixed



- More focus on keys, less inbetweens
- Six frames less than old version, but still as effective and has more punch

Cerebella Diamond Punch



- I don't know why this is 45 frames
- Overanimated, tons of unnecessary inbetweens

Cerebella Diamond Punch, fixed



- 29 frames-
could maybe be
even less
- Needs
readjusting,
but the poses
are much
clearer

One more note about Filia



Original version



One frame removed

Review

- Focus on your keys and use followthrough to fill in the gaps
- The core parts of a move: anticipation, smear, attack, return to idle
- Animation can and *should* work with game design

Resources

- Zweifuss (zweifuss.ca)

Street Fighter III: Third Strike sprites

- Fighters Generation (fightersgeneration.com)

Thousands of sprites from all kinds of fighting games

Thank you!

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Games Referenced:

Skullgirls, Autumn Games
Super Mario 3D World, Nintendo
Punch-Out!!, Nintendo
Naruto Shippuden: Ultimate Ninja Storm 3, Namco-Bandai
Journey, Sony Computer Entertainment
Darkstalkers, Capcom
Street Fighter III: Third Strike, Capcom
Metal Gear Rising: Revengeance, Konami
Super Smash Bros. 3DS, Nintendo
Marvel vs Capcom, Capcom
Guilty Gear, Arc System Works
Dead or Alive IV, Tecmo
Street Fighter IV, Capcom