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## ANI172.1 Stop Motion Animation Example 1

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## ANI172 - Assessment 1: Stop Motion Animation

- **Process:** Discuss an interesting quote from the week 2 pre-class reading from *The Illusion of Life* (Thomas & Johnston, 1995). What new information did you discover about the principles and how can you apply this to your own process? Were there concepts you were unaware of that can improve your workflow and planning? Give specific examples of your research and how it informs your project. Cite sources in APA 7th.
- **Person:** What communication skills does this project require, and how are you responding to feedback and giving feedback to others? For group projects, how are you working to enhance communication and active collaboration?
- **Proficiency:** What skills, techniques, knowledge, or technologies are you using to achieve project requirements? Give examples analysing the strengths and limitations of work in your field and reflecting on the skills, knowledge and research relevant to your project.

### Project Goals:

To come up with a simple 5 to 10 second stop-motion animation that explores your three chosen principles of animation. You will create a planning document where you will show your research and how you have applied the principles of animation through the creation of a simple storyboard.

The final animation should include the following:

- Maximum of 2 objects (not including background/scene/props)
- Use clay animation or other supporting mixed media approved by your facilitator
- 5 to 10 seconds of footage at a minimum frame rate of 15fps (24fps is ideal)  
Sound/FX optional

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## Research and Ideation !

## The 12 Principals of Animation

The 12 principles of animation are a set of rules and guides introduced by Frank Thomas and Ollie Johnston (two key animators at Disney during the Golden age of American animation) in the book *Disney Animation: The Illusion of Life*, 1981. The principles are based around early Disney animators' quest to produce more "realistic" animation (realistic *feeling*, rather than realistic *looking*. They weren't attempting to 1:1 copy film). The main purpose of them was to act as a guide on giving the illusion that animated characters adhered to basic laws of physics, but they also touched on more abstract topics, such as character appeal and emotional timing.

Notes on the video "12 Principles of Animation (Official Full Series)" by Alan Becker:

### Squash and stretch

Squash and stretch involves elongating/flattening an object or part of an object to demonstrate and emphasise its speed, momentum, the weight, and mass. It's really important to maintain the volume of the object when using this principle, as to avoid the object looking like its growing and shrinking rather than just squashing and stretching - whenever an object gets longer it should get equally narrower, when it gets flatter it should also get wider. The amount that the object squashes and stretches is influenced by the mass and material of the object, with softer objects having more squash and stretch and more stiff ones having less.

The principle applies to characters as well, both in full body movement and facial expression. It works to exaggerate a motion and can push facial expressions to be more dramatic or interesting, but it is also a realistic imitation of life and the way human bodies move.

Don't over do it ! The object in motion doesn't have to be squashed or stretched at all points of it's movement.

### Anticipation

When a character prepares for an action to clue the audience in to what is going to happen next, as well as to make the motion more realistic. The energy should come from somewhere, especially if the movement is something powerful like a punch or jump; without anticipation the character looks they are doing something other than the intended action like they are just touching the person, or floating off into space. Helps communicate with the audience so they don't miss details the animator is trying to convey.

### Staging

Staging is the presentation of an idea so it is completely and unmistakably clear. This principle is broad in its application, with relevance in acting, timing, cam angle and position and setting. you want full control of where the audience is looking, all aspects of the scene should work together to move the views eyes to the desired places in the scene. Camera setup plays a large part; far away is good for big actions, while close up is great for expressions. Main actions should be centered or follow the rule of thirds. The main action of the scene should be clear and simple, with proper timing. Pausing is good! If something needs processed or read, taking a pause in the action is a good way to make sure things aren't moving too quickly for the audience to keep up.

Conveying ideas is just as important to staging as controlling where the viewers eyes are, if a character is sad it should be obvious. It's better to go over the top and walk it back if it means the idea is clear!

### Straight-ahead and pose-to-pose

This principle describes the two methods used to animate drawings. The first is straight ahead, where you draw the first drawing, then the second, then the third and so on, essentially animating as you go. The second method is pose to pose, where you draw the first and last part of each main pose then fill in the drawings in between later on (called inbetweening).

Both have their strengths:

Pose to pose is generally better for the majority of actions since it gives you the most control and you'll have a good idea of what the action will look like early on. Straight ahead animation can lead to the character changing size or moving to a different level from beginning vs the end, so pose to pose can save you a lot of headache in that regard.

Straight ahead on the other hand is good for action that's unpredictable like fire, water, clouds of dust and explosions, for example. This is because there are laws of physics that work at a constant rate and it can be hard to predict how they will work using pose a pose.

For some situations you may combine the two, like for a character with secondary action in their hair or clothing.

*Pose to to pose vocab:*

Main poses called **keys**.

Secondary poses are **extremes**.

And further broken down poses are called **breakdowns**.

Start with perfecting the keys, then decide the farthest the character will go in each direction using extremes. Next decide how you want the extremes to connect using breakdowns, then you can start inbetweening.

### Follow through and overlapping action

Follow through and overlapping action refer to having body parts and appendages drag behind the rest of the body and continue to move when the body stops, and are often associated with another technique called drag. These names all describe the same idea in different ways.

Follow through refers to the way parts of the body continue to move after the body is stopped, while overlapping action describes the offset between the timing of the main body and its other parts, and drag is the technique of delaying the movement of body parts in relation to the main body. All three of these terms are essentially describing different parts of the same concept. Follow through and overlapping action add a great deal of realism to a character, and similar to squash and stretch the amount of drag that you give something informs the audience of its mass and other physical properties - smaller amounts of drag may imply a more rigid object while more will imply an object is softer or more flexible.

Generally it's easier to add the appendages after the animation of the main body is finished, as you can use the previous frames as indicators of where the secondary asset should move.

### Slow in and slow out

This refers to the way almost all movement start slowly, build speed and finish slowly, and is one of the most important principles to achieving lifelike motion without things feel mechanical. To use this principle in 2d animation you take your extreme poses, draw a single in-between and then draw in between those then only in between the drawings closest to the extremes until it looks natural. In 3D animation and motion graphics this can be achieved through changing the motion curves from linear to spline by adjusting the bezier handles.

It is important to use this with intention, for example you wouldn't add a slow out to a bouncing ball as it's hitting the ground, but it would make sense to use as it's bouncing back up. It wouldn't work for a bullet coming out of a gun, but you may add it as the gun comes up due to whiplash.

It's very unrealistic for a character to go from completely still to super fast, so adding a few drawings to ease into it will fix the problem. A good way to fix a choppy animation is to look at the space between the drawings; They should be evenly spaced with drawings closer together at the beginning of the action and at the end of the action, with drawings farther apart in the middle.

### Arcs

Very few organisms move in perfectly straight lines and hard angles, generally living creatures will move in a circular paths referred to as an Arc. They are essential for producing fluid, realistic, and organic movement, and avoiding your animations looking mechanical or stiff.

### Secondary action

This principle is often associated with overlapping action, but according to Frank and Ollie it means something completely different. Secondary action describes gestures that support the main action to give the character more dimension and appeal. For example if a character were walking angrily the primary action is the legs, the secondary action is everything else that context clues for that emotion; The arms swinging, the head bobbing and the facial movements.

### Timing

Timing states that the personality and nature of an animation is strongly influenced by the number of frames inserted between each main action. If you have many drawings that are very close together in between the two main poses the action will be very slow, while very few drawings set far apart from each other means the action will be very fast.

The standard frame rate for movies is 24 frames per second. If a new drawing is made for each frame, it is referred to as drawing on ones, for every second its drawing on twos, for every third, drawing on threes and so on. Drawing on twos is very common for for a few reasons; it cuts the amount of work in half, makes slow actions look smoother than if you were to draw every frame, and gives a sparkle and spirit to the animation.

### Exaggeration

Exaggeration is the idea that every action, pose and expression can be pushed to the next level to increase the amount of impact on the audience. Making something more realistic doesn't mean making the physics and proportions more consistent with reality, rather making the idea or essence of the action more apparent and real. So if a character was sad, make him sadder. Exaggeration doesn't mean more distorted, but more convincing. It can be hard to tell how much room you have for exaggeration, so generally it is a good idea to push the exaggeration level until it actually becomes too much then wind it back until you're satisfied.

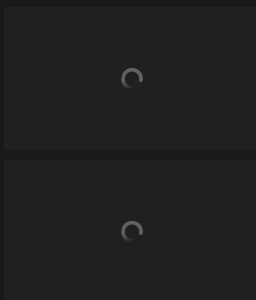
### Solid drawing

This principle is about making sure that forms feel like they are in three-dimensional space with volume, weight, and balance. Animating is a lot easier with knowledge of how to draw characters from all angles. When doing a rough pass of the character using basic solid shapes like spheres, cubes and cylinders to construct the character instead of circles squares and rectangles, as well as perspective lines, can help avoid your character looking flat and losing dimension.

### Appeal

Characters that you animate should be somewhat pleasing to look at, with some kind of charismatic aspect to like about them. This doesn't only apply to the hero of the story, but also the villain and every other character! Having appeal doesn't always mean good-looking, it can also just mean interesting.

## What is Stop Motion?



Stop motion is an animation technique that involves manipulating physical objects within a shot and photographing them between incremental changes to create the illusion of movement. Going into the assignment I could think of a few stop motion films and productions off the top of my head pretty quickly; Coraline, Kubo and the two strings, Fantastic Mr. Fox, The Corpse Bride, and ParaNorman were some of the first that came to mind! It didn't take much looking though to realise I recognised tons of the stop motion animation I was finding, especially in children's television from the 70s, 80s, and early 90s, where it seemed to be a really popular style choice for kid's shows.

From what I can tell there is some disagreement on how many categories of stop motion there actually are, but the six Adobe lists in their article "*Stop motion animation explained: definition, types and techniques*" (Brown, 2023) consistently make the majority of lists I found in my research:

**Object motion** is any animation where everyday objects are being moved and manipulated for the animation. Toys (though I would argue some objects, like Lego, deserve a category of their own!), food, office supplies, are all examples that fall in this category.

**Claymation** uses characters, objects or sets made from clay, plasticine or other similar materials

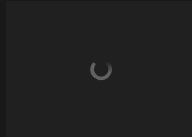
**Pixilation** involves live actors, taking photographs of them holding a pose before moving slightly for the next frame, which differentiates it from regular film.

**Cutout-Motion** uses paper cut into various shapes on a flat background, usually shot to have a 2D aesthetic

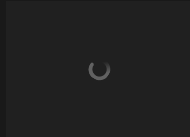
**Puppet Animation** one of the most common in big feature films (think LAIKA Studios or Tim Burton's work), it involves creating and posing often complex and sophisticated puppets to pose in the frame.

**Silhouette Animation** utilizes light and shadow to cast shapes to tell the story, usually from behind a sheet or on some other plain light coloured backdrop

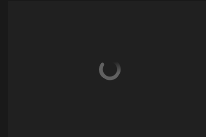
**Stop Motion  
Examples:  
Some of my  
favourites,  
or ones that  
have stuck  
in my head  
from  
childhood !**



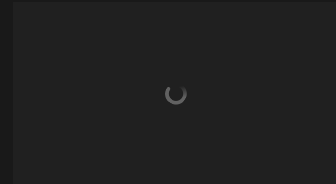
ParaNorman, LAIKA Studios (2012)



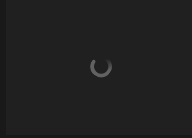
Fantastic Mr. Fox, 3 Mills Studios (2009)



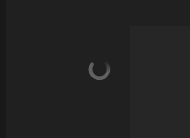
Kubo and the Two Strings, LAIKA Studios (2016)



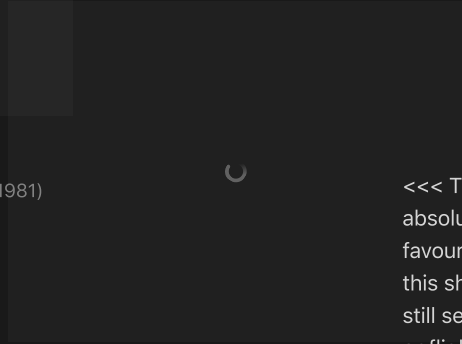
Pingu, Pingu Filmstudio (1990)



Bloom, PJ Liguori (2009)



Postman Pat, Woodland Animations (1981)



Soupe Opéra, Marlou Films (1991)

<<< This is absolutely not a favourite. I hated this show as a kid. It still sets off my fight or flight response like 20 years later and I could not tell you why, it's visceral. But it popped into my head as a good example of object stop motion, so that's cool I guess

### **Ideas and Boards!**

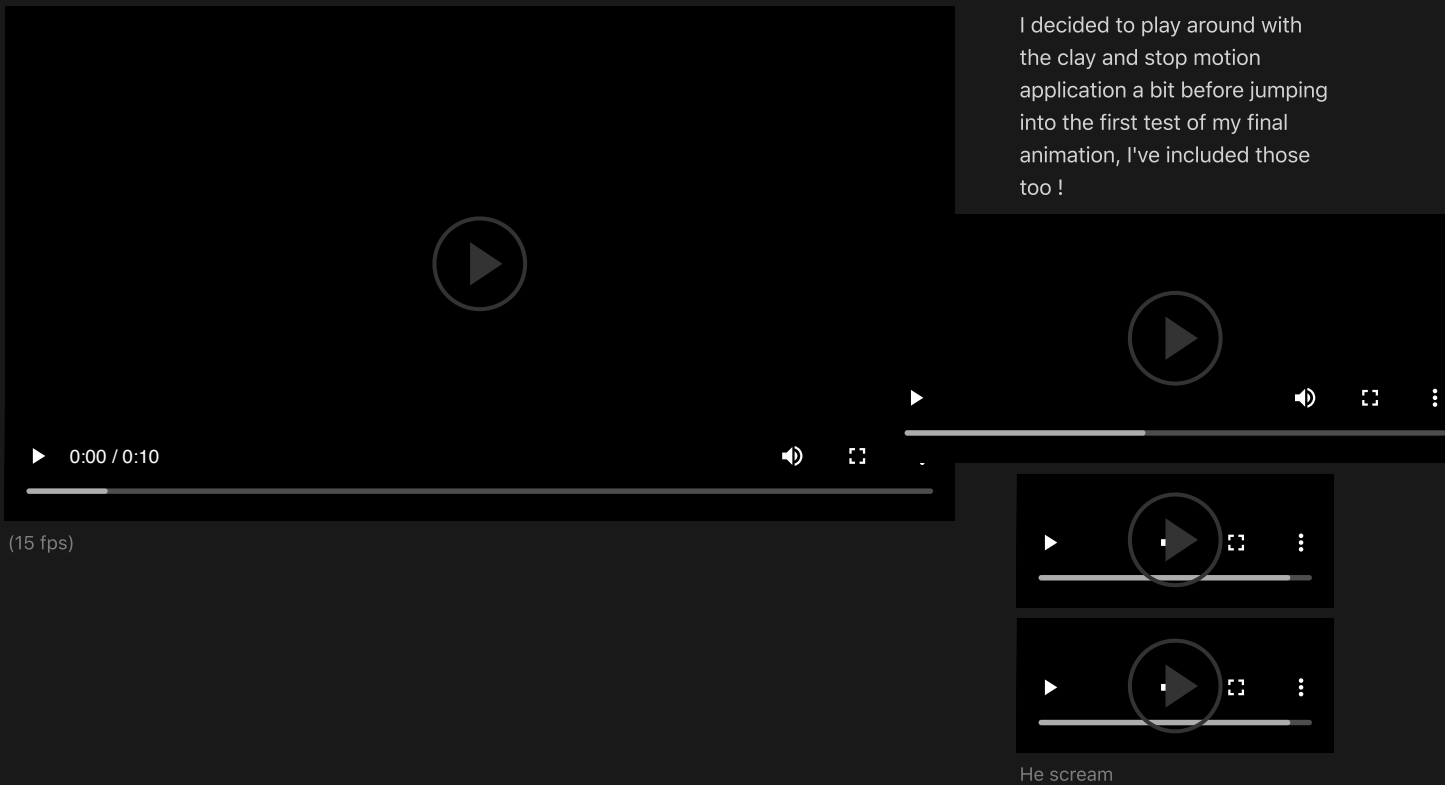
I had a few ideas that used a couple different variations and combinations of stop motion animation styles, including:

- a tiny paper man exploring my book shelves, and either folding himself into an airplane to escape, or being eaten by a book
- cracking into my old ninja turtles toys for some sort of breakdance battle
- a silhouette animation sword fight that would tear dramatically through the sheet to reveal much tinier characters than the shadows would have had you believe

I didn't want to go too overboard, so I ended up settling on using a combination of pixilation and claymation instead, since I felt it would be the best medium to demonstrate the three principles clearly for the assignment brief! Two balls of clay would turn into creatures, their features determined by the roll on of a dice. The one who rolled high isn't very nice.

## **Test Animations**

I decided to play around with the clay and stop motion application a bit before jumping into the first test of my final animation, I've included those too !



For the test animation I knew I wanted to focus on staging and just blocking out the movements really roughly, so I could fix and tweak any issues/anything I didn't like early on.

The "issues/didn't like" list was pretty long

- The camera angle/framing - I struggled to find a good middle ground between too low to see the dice rolls and too high for the big guy to look *big*. Also don't like the distance of the shot, it's too far away.
- Maybe push the exaggeration of the characters size difference more?
- Blue tack down the dice so they don't move and ruin the continuity of the shot !
- Lil guy looks like an among us character :/
- Couldn't get the face to look the way I wanted for the scream in the little character animation tests I did
- Toward the end of the animation you could see me giving up on it, I wasn't happy with it!

### Back to the Drawing (Story)board

I was really not liking the way things were going so I decided to simplify my idea to involve just one character and sketched out some quick new boards!

## Mid-project Reflection

**Process:** Discuss an interesting quote from the week 2 pre-class reading from *The Illusion of Life* (Thomas & Johnston, 1995). What new information did you discover about the principles and how can you apply this to your own process? Were there concepts you were unaware of that can improve your workflow and planning? Give specific examples of your research and how it informs your project.

**Proficiency:** What skills, techniques, knowledge, or technologies are you using to achieve project requirements?

I was already pretty familiar with the pre-class reading before this assignment, as I've read parts of *The Illusion of Life* (Thomas & Johnston, 1995) before, but it's always helpful to refresh that sort of thing! I thought the section on follow through and overlapping action was interesting, and how it differs from overlapping action according to Thomas and Johnston, specifically five points they broke it into:

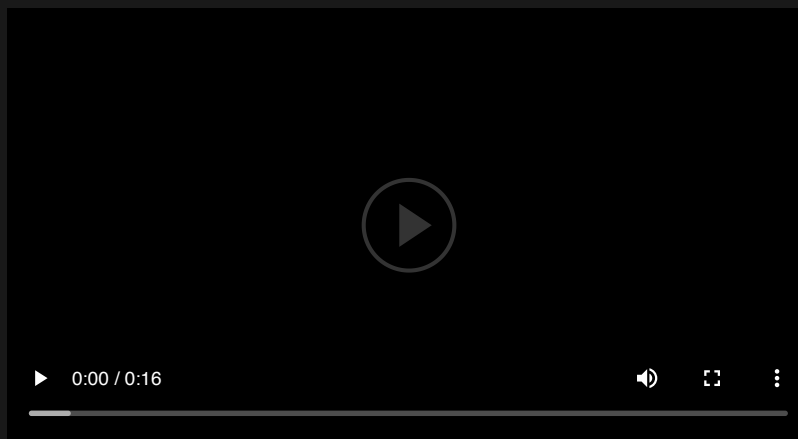
1. If the character has any appendages, such as long ears or a big coat, these parts continue to move after the rest of the figure has stopped
2. The body itself does not move all at once, but instead it stretches, catches up, twists, turns, and contracts as the forms work against each other
3. The loose flesh on a figure, such as its cheeks or Donald Duck's body or almost any of Goofy, will move at a slower speed than the skeletal parts
4. The way in which an action is completed often tells us more about the person than the drawings of the movement itself
5. The moving hold, which employs parts of all the other elements of follow through and overlapping action, using a few frames without movement to allow the audience time to absorb a character's attitude.]

I hadn't read properly through this part before, but it made a lot of sense being broken down and explained in that way!

I'm trying to keep all the principles in mind during the project, not just the three I've chosen to focus on for the assignment, and have been using claymation to practice using the stop motion studio app.

I can already tell I'm falling a little behind with the project, so I'm going to try to set aside some more time to power through some of it over the next couple days!

## Final Animation and Reflection



**Appraisal:** Overall, how successful was your project? What worked or didn't work, and why? How did it match your expectations?



**Challenges:** What obstacles did you overcome and how? What lessons did you learn?

**Future Goals:** How will you improve your skills for future projects? What will you do differently in your next project? What will you repeat?

How successful depends on how we were measuring success I suppose! I really struggled with getting it done, missed a lot of the checkpoints and the assignment deadline with how much I've had on my plate. I'm also not completely satisfied with the result - I think it could have used more frames to smooth the actions a bit, the camera changes focus on a couple frames, and there were a couple continuity errors I missed while making it (I bumped the dice, a pen knife I was using to move the character's eyebrows comes into shot for a couple frames, and a little piece of green clay somehow ended up in the background??). But despite not loving the actual animation at the end I feel I learnt a ton during the process, and that feels like a win at least! I feel I could make something much better with another attempt and some more practice. I also think I managed to demonstrate the principles I was going for, so by the brief standards it was a success in that capacity. The three principles I settled on were anticipation, ease in ease out, and arcs:

Anticipation - in the hand shaking the dice to show that it was about to be rolled, in the smaller shakes and jitters of the clay before it stretched into the character, and in the wind up before it threw the dice away

Ease in ease out - again in the dice roll shake, the flames get closer at the extremes of the motion

Arcs - Can be seen throughout most of the clip, in the dice roll, the character walk and throwing of the dice, and in the dice bouncing away

I definitely think I could have pushed and emphasised them more but all three are demonstrated in some capacity!

I also think the choice of backdrop didn't work especially well, I thought using the books to hold the wire for the dice to float would work well but it made the books move which changed the background and was really obvious. If I had of tried it in my animation test I would've noticed and done it differently but by the time I reached it in the final animation take I had already gotten so far - it didn't seem worth further putting off my assignment submission to fix. Having it in the bookshelf was really great for controlling the lighting but it made the scene less accessible to work on and was less forgiving of tiny movements of the camera, so I don't think I would make that choice again either. The project matched my expectations in a lot of ways, I knew it would take forever and probably be more than a little tedious - the fact that stop motion only really allows for straight ahead animation meant I would have little room to fix anything after the fact, and working on the smaller scale would definitely add to that tediousness - by I underestimated just *how* time consuming it would be!

I think it's pretty obvious from the quality that I've never really done claymation before, but I learnt a lot in just the couple weeks working on this assignment! I now know more about the 12 principles of animation and how to implement them in stop motion, how to use the app "Stop Motion Studio", the history of stop motion, and how to fix problems on the fly for projects that use the straight ahead animation technique! In the future I think I'll focus on doing more test animations to get a better idea of what hurdles I may come across during a production, and familiarise myself with the materials more so I can utilise them better and make sure things are able to stay on model.

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## Bonus: The Wacky, Stupid Camera Setup Gallery

Watch the setup get gradually more convoluted

