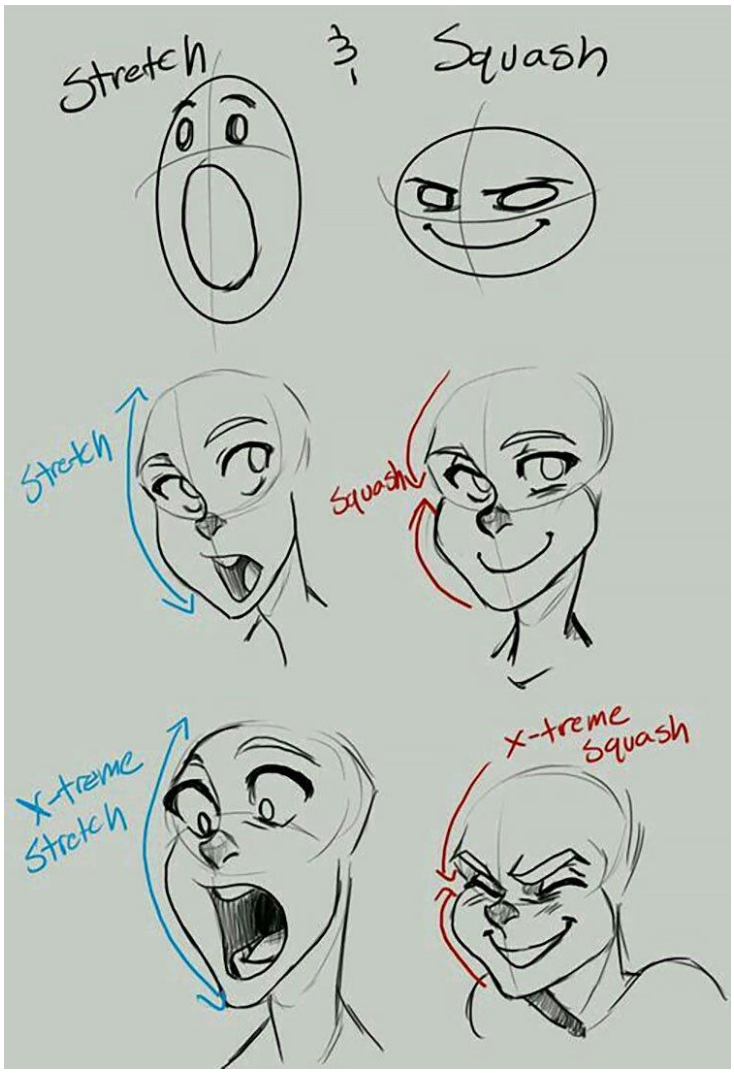
Unit-V

The Body language

1. Men and Women

Here’s a sketch that features expressions from both men and women. I think my favorite is the first sketch. It’s so fun and creative.

2. Stretch and Squash



In this photo, the artist shows the difference it can make by stretching the face vs.

squashing the face. They also provide reference for an extreme stretch and an extreme squash.

3. Dramatic Expressions

I love how the expressions drawn here are super dramatic and fun. Going over the top

is a great way to have fun and practice drawing facial expressions at the same time.

4. Quick Expressive Sketches


BUBBLEGUM!
ROFL
ROFLMAO
ohider.
miss kuff
SRS BSJS.
ew!
yuck!
LOL WAT.
and i declare...

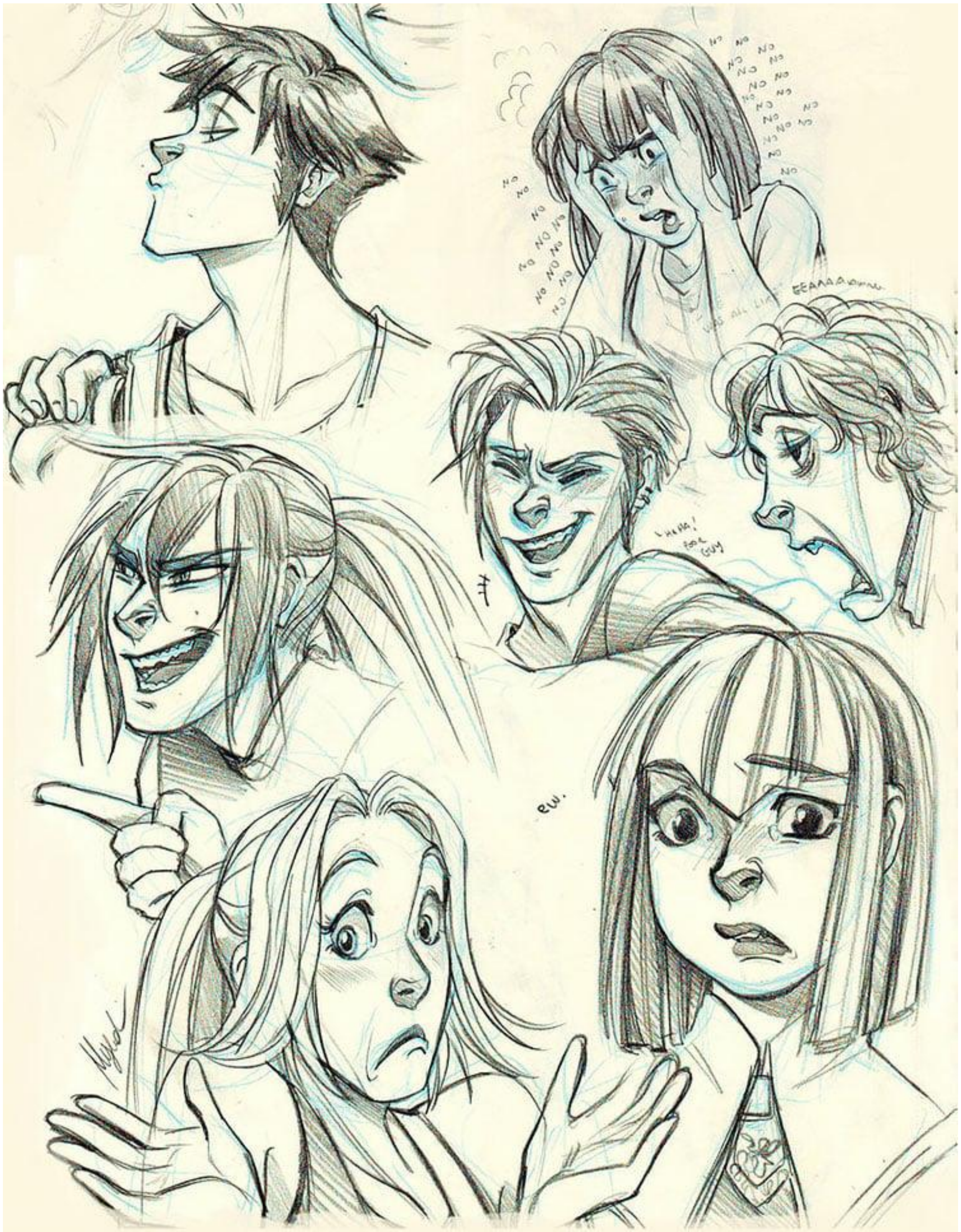
Practice a bunch of different expressions by doing quick sketches such as this one. Don’t worry about your drawings be perfect.

5. This Is Good This Is Better


This is good
This is BETTER!
This is Good
This is BETTER!
This is Good
This is BETTER

I completely agree with what the artist has done here by showing a good expression, and then an expression that’s even better. You can see the difference that subtle changes can make to your facial expressions.

6. Male and Female Expressions



Here’s a sketch page that includes both male and female expressions. Not only are the drawings great, but the artist did a

wonderful job with the different facial expressions too. I think my favorite is the one on the bottom right.

7. Quick Sketches

If you want to get better at drawing cartoon facial expressions, I recommend doing some quick sketches every day. You don’t have to sketch for a long time either. Just 20-30 minutes a day is a great start.

8. 50 Facial Expressions

 Happy	 Ecstatic	 Content	 Sad	 Depressed
 Embarassed	 Nervous	 Angry	 Furious	 Devious
 Bored	 Annoyed	 Surprised	 Tired	 Exhausted
 Disgusted	 Smells!	 Really?	 Hyped	 Grumpy
 Proud	 Cute	 Snob	 Brat	 Evil
 Sneezing	 Sour	 Talking	 Shouting	 Laughing
 Excited	 Relaxed	 Smiling	 Fake Smile	 Wink
 Sleepy	 Shut Tight	 Kissing	 Scared	 Horrified
Confident	Tough	Intimidating	Stoic	Intense
Goofy	Serious	Thoughtful	Model	Confused

Drawing Lessons #1: Draw what you See

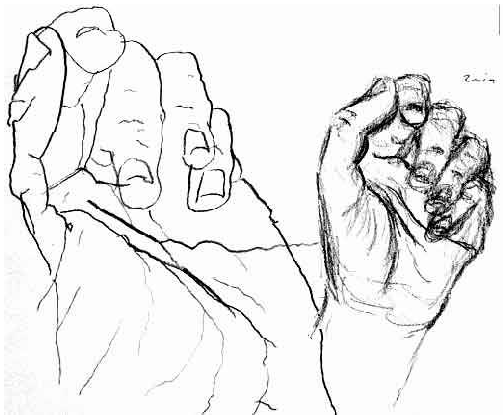
The biggest problem that artists must overcome is not one of technique or of inspiration. The biggest problem is the lack of seeing. When people go through their lives every day, they do not see. They look. There is a very simple reason for this; no-one could possibly notice every detail in the world around us. So the brain filters out the details for us. When you are walking down the street, you see the street, the sidewalk, the other people, and the buildings. You do not notice the cracks in the sidewalk or the weeds growing in those cracks; the quality of the pavement or the type of cars on the street; the expressions of the faces of the people around you; the texture of the bricks on the buildings you pass. All of these things will have an impact on you, but mainly on a subconscious level.

The part of the brain responsible for this filtering is the left side of the brain (all those who have read "Drawing on the Right Side of the Brain, please skip to the first exercise). It replaces the bricks in the building with the word "wall", the vintage Model T with the word "car". But when you actually start to notice and observe what is around you, you can force another part of your brain into action; the right side.

The right side of the brain is what controls your unconscious, your instincts. Talking is a right brain function; when you talk you do not think in terms of article - subject - preposition - adjective - adverb - descriptive verb. However, when most people draw, this is exactly how they think. To draw a person, you draw a head, a body, two arms and two legs, the hands, the feet, the hair, and the clothes. But, you are not actually drawing legs, arms, heads, etc. You are simply drawing "symbols" that you have learnt for these things. A leg is two long straight lines, sometimes bent a bit. A head is an elongated circle. In short, you are drawing what you think these things are, not what they are.

I will for now omit the further explanations of how and why this happens, but all serious art students should read about how the brain works in the marvelous book, The New Drawing on the Right Side of the Brain: A Course in Enhancing Creativity and Artistic Confidence . For now we

will concentrate on the exercises that will remove drawing from the left side of the brain and shift it to the right.



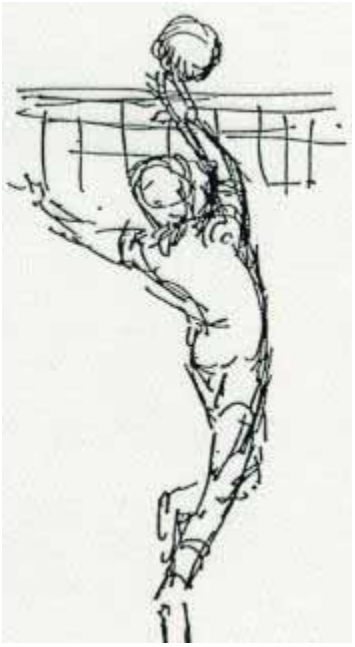
Okay, the torture's over. Relax your hands, and note the interesting blue colour underneath the fingernails. After you havemassaged them back to a more normal colour, you may now look at your drawing. Ahhhhh! It looks awful! Well, don't worry, that's normal. You see, the point of this exercise is not to make a beautiful work of art (although that is rare but pleasant side effect). The point is to stop using those symbols I was rambling on about a few paragraphs ago. If you can't see what you're drawing, it's a lot harder to draw an ellipse. And by forcing yourself to draw slowly, you will start to observe details you never saw before. The indentations in the skin of the knuckle. The irregular folds of flesh of the hand. The webbing between the thumb and palm.

While pure contour drawing has no direct link to animation, "normal" contour drawing does. All cleanups are essentially contour drawings; they are drawing slowly and painstakingly, just like the one you just did. Check out the example in the margin of Pocahontas to see what I mean - the cleanup probably took about 4-5 hours.

A patience exercise: Find a place where you can work undisturbed for half an hour. Place your sketch book open on a table on your **right hand side**, preferably tilted towards you. Hold your pencil lightly in your right hand, and place it roughly in the middle of your paper. Now, **turn in your chair until you are looking in the opposite direction of your paper.** Your right hand, the pencil and the paper are now behind you. Place your left hand on your knee and relax. **VERY SLOWLY**, start to trace the contours of your hand. *UNDER NO CIRCUMSTANCES LOOK AT YOUR PAPER!* Draw everything you see. Do not attempt to name something (like a fingernail) and then draw it, because you cannot see the paper you are drawing it onto. Just "trace," as accurately as you

Drawing Lessons #2: Draw what you Feel

can, the contours of that thing (which just so happens to be a fingernail).You should start by drawing for about 15 minutes at a time (use a timer!), and gradually work up to anywhere from 1/2 hour to 2 hours per hand. After you have been doing this exercise for *several weeks*, you may look at the paper occasionally to reposition your pencil. But do not move the pencil until you are again looking away.



You have survived - intact - the rigors of contour drawing. Now the fun begins. We will learn a technique called gesture drawing.

With contour drawing, the name of the game was detail. Now, the game has changed; it's called structural movement, which means, oddly enough, movement of the structure. This name is a bit deceptive as it implies that there is physical motion; in reality, this motion is imagined. Does a flower have structural movement? Sure it does. If I put my pencil near the bottom of the page and try to draw a rose, my pencil will be drawn, almost on it's own, to the petals of the flower. Once there, the line will shoot out to the tip, only to fall again to the centre, and re-emerge on the other side of the petal. It's simply following the structural movement of the flower. Once again, you'll understand what I mean after you've done it yourself.

A gesture drawing does not show the surface details of an object, rather the forces that are contained within that object. Like contour drawing, it involves an almost complete loss of conscious thought and allows you simply to react to what you see. Okay, I'm starting to feel like I've rambled enough. Time for an exercise.

Drawing exercise - Take any complicated object. A live model (clothed or nude) is best, but a flower, plant, pet, ribbon, or any other organically shaped object should do fine. (I would not recommend using your hand this time, as gesture drawing is very physical and involves the whole upper body and you will not be able to keep your hand still). Set your timer to 15 seconds. Yup, you heard right. You've got 15 seconds to draw the object in front of you. After the time is

up, move the object or get the model to change poses. Repeat a minimum of ten times. Now set your timer to 30 seconds and repeat 5-10 times. Now set it to two minutes and repeat about five-ten times. Note that your drawing speed should NOT CHANGE; when you have 2 minutes you should draw like you have fifteen seconds.

And truthfully, that's all there is to gesture drawing. But there are some 'tricks' you can use to make your drawings more dimensional and lifelike:

Directional Lines:

> Imagine that every cylindrical part of the body (arms, torso, legs, even the head) is covered by circular lines. These lines wrap around the body like a mummy. If you draw these lines, you will automatically gain a better sense of space. (If you are using a flower, these lines would wrap around the stem and would loosely enclose the flower itself)

Centre of Movement:

> If a person is sitting, the centre of movement is the torso. If the model is crouching, the centre is in between the two feet; if (s)he is hanging, it's in the arms. This strategy does not always work, but is worth experimenting with.

margin for demonstrations

So what does this have to do with animation? Many animation roughs look like gesture drawings on steroids. Some of the most amazing gesture drawings are those by Glen Keane (in the margin). The main difference is that an animation rough must ALWAYS be to proportion - a gesture drawing does not.

Drawing Lessons #3: The Human Figure (1)

So, we've drawn contour drawings for hours, and gesture drawings for seconds. The results of these exercises are not supposed to look "real". But, when we're talking about drawings, what is real anyways? The drawing is a flat page, so "real" can't mean 3-d. A colour photograph looks real, but we're not using colours (yet). The first thing that makes a pencil, charcoal or conte drawing look real is PROPORTIONS.

Exercise: Pick a point on or near the model (say the tip of his index finger). Then pick another point (say the tip of his nose). Draw a single dot on the paper - that is the tip of the finger. Now, using your pencil at arms length in front of you, measure the angle between the finger and the nose. Without bending your elbow or wrist, bring your arm down to the paper until the bottom of the pencil is touching the point. Pick any point along the resulting line - that is now the tip of the nose. These two points will determine the size of your entire picture.
Now pick another point - say, the model's elbow. Measure the angle from finger to elbow as before, but instead of marking a point, trace a line. Now, measure the angle from the *nose* to the elbow. Trace that line. The intersection of the two lines is the position of the elbow. Bingo! Now repeat this for the other 5000 body parts you can see. Good luck!

Now, there are several ways to go about getting accurate proportions into your drawings. You know how in movies, artists are always sticking their pencils out in front of them to measure distances? Well, although artists do that, occasionally, a far better use of the pencil is not to measure *distances*, but to measure *angles*. There are several reasons for this: if you move your hand even slightly closer or farther away from you between the time than you measure the object and the time that you draw it, the proportions could go wildly off. You can only draw the model "life size" - that is, the size at which you perceive him/her. And then there is the fact that we are trying to draw poses, and a munchkin can usually attain the same pose as a basketball player, even though he is a fraction of the size of the basketball player. What the munchkin and Micheal Jordan **will** have in common is the angles at which the different parts of their bodies relate to each other.

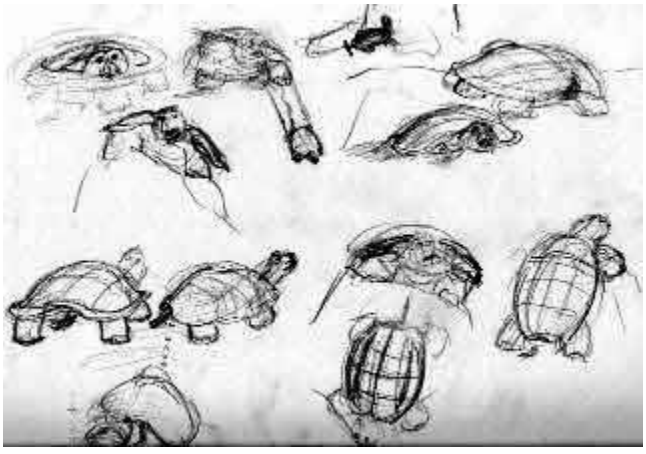
So, read the above and do the exercise. Contour drawing is starting to look exiting. Surely this isn't what animators do? Of course not, but it is a useful exercise to get you thinking about proportions. By the way, this is a sort of drawing which combines left and right brain functions - the right brain does the angles, the left checks to make sure they're right (no pun).

See what you can do with the previous three exercises. Why don't you measure out the proportions of the figure, using maybe 5 points (hands, feet, head). Then do a 2 minute gesture drawing, but trying to stay roughly within the confines of the five points. Darken in the best outlines of the figure, noting both the five points and your gesture drawing. Finally, do a contour drawing, but look down and the page from time to time, making sure that you stay on the rough outline that you've already drawn.

Now, if you're smart (and I know you are), you'll have noticed that this exercise doesn't really have much to do with the human figure in particular. Does this mean I've just been blabbing away at my keyboard for no real reason? Well, yes, but this is also intended as another way of getting you to think about the figure. When we next revisit the human figure, we'll start to study a bit of anatomy.

Drawing Lessons #4: Exercises

Nope, not *real* exercise - those are for your model (at least in exercise 4!). Keeping fit is your own business; for now, check out these exercises. Some I made up; others (where listed) come from a book.



The One Minute Character Sketch

Pick a character, any character. Now pick and emotion, or an action (eg happy, excited, angry, fearful; walking, talking, exploring). Set your timer to beep every minute. Now, every minute, make one full-bodied (no close-

ups) drawing of your character in whatever emotion or motion you have chosen. Keep going as long as you can. I generally run out of ideas at about the 30 sketch mark; if that happens, take a break and try again later. This exercise teaches you about staging (composition), as well as expression emotions with the full body (as there is not enough time to draw the face). I recommend one hour of this exercise, with breaks every 20 minutes or half hour (use another timer to time that).

Source: Animation: From Script to Screen

Cafe Drawing

THIS IS IMPORTANT!!!!!!

Also known as the flash pose, this simply involves drawing anyone or anything around you. In the case of the drawings on the left, I was getting bored at a rehersal so I simply started to draw the people around me - in this case, a girl practicing a dance from "Jesus Christ Superstar". This exercise is where you learn to draw FAST because you never know when people will move, or people may be moving already. The drawing is not quite a pure gesture because, to a certain extent, you are trying to get a rough likeness, but the style of drawing is definitely very gestural.

The One Minute Movie Sketch

This exercise requires a VCR with freeze-frame; that is, when you push the "Pause" button the picture should be clear with no fuzzy lines. Put in a movie - any movie, animated or not - and start watching it. Set your timer to beep every minute, like you did with the 1-minute character sketch. Start your timer. When the timer first beeps, pause the film. Now, draw - either the entire scene, or just one character in the scene. When the timer next beeps, resume the movie. Repeate as often as you wish. This exercise will increase your awarness of staging and action.

I developed this exercise on my own, and then learnt about six

months later that it is actually taught at Sheridan and other art colleges. So I guess this one works after all!

The Moving Pose

This rather interesting exercise is an obvious extension of the gesture drawing for the animation student. This exercise requires the use of a model (actually, a model exercising would be ideal). The model picks an action which he or she either repeats or which is a cyclic action (walking on a treadmill, using a NordicTrak, using a stationary bike). I have even drawn other people drawing other people. You now start to draw the entire action on the same spot on the page. Usually you will start with the part of the model that is the most stationary and move out to the parts with the most movement. This exercise can be as long or as short as you wish.

When you feel you have mastered this try seperating the poses. Decide, for instance, that you will draw five distinct poses. Using a BIG sheet of paper, start to draw five different stages of the action. Do not complete one before moving on to the other, rather, work on all five at the same time, just like in the exercise above. When you're finished, you should be able to seperate the poses, feed them into a pencil tester and see the original movement once again.

Source: The Natural Way to Draw: A Working Plan for Art Study

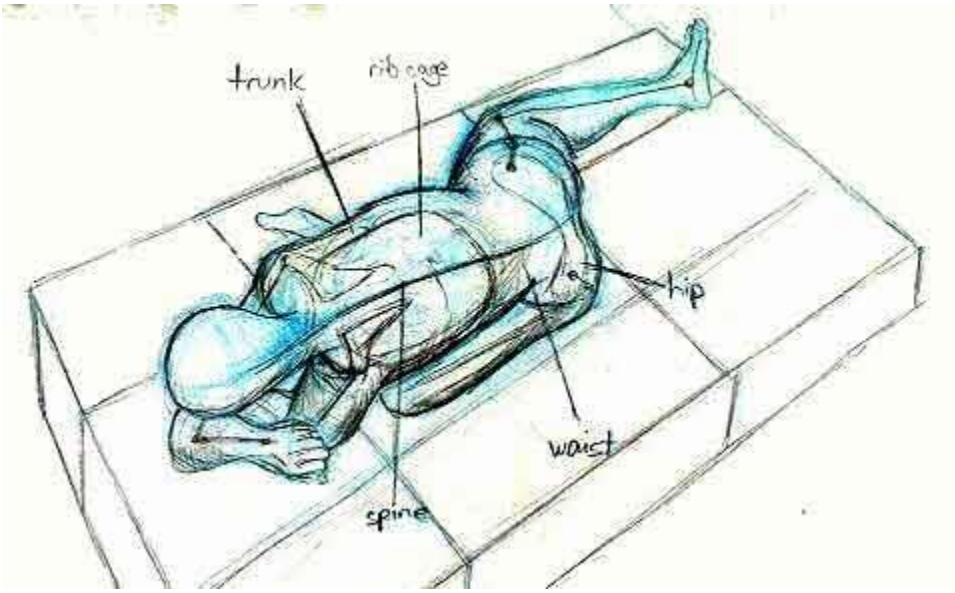
Remember: none of these necessarily need to be done with a nude model!

Drawing Lessons #5: The Human Figure (2)

Anatomy

Welcome to our continuing lessons into anatomy. If you are looking for detailed, concise, clear and accurate descriptions of human anatomy, then you have come to the wrong place. These pages will only give you the briefest of introductions to the human figure and what's going on under the skin. The diagrams are not anatomically correct, but they are useful in that they will give you something to look for while you are drawing a person.

The Trunk



For starters, let's look at Eden, lying on the floor. Now, this looks like a fairly simple, easy pose to analyse and draw. It's not. Your first impluse, upon seeing this, would probably be to draw a large rectangle to represent her trunk. This is the worst possible thing you could do. First of all, let's look at these pictures more closely.

You will see, coming out of the bottom of her swim suit, a dark streak going down the middle of her back with alternating light and dark patches (which did not survive the JPEG compression very well). This streak is her spinal chord, or backbone. It is what holds the body together. It is NOT the line of action, which flows through the whole body, rather, it only flows from the hip

bone to the base of the skull. Nevertheless, the two often coincide, and at the very least the spine is an indicator of what the line of action should look like. So, when I began to draw this 'illustration', the first thing I did was to draw the line of action along the spine. You will notice that I made the angle a little shallow, and so the entire picture looks like it was taken at a slightly different angle - while this was a mistake, it shows how the body must follow this first line. So: Drawing rule: look for the spine, and use it to find the line of action.

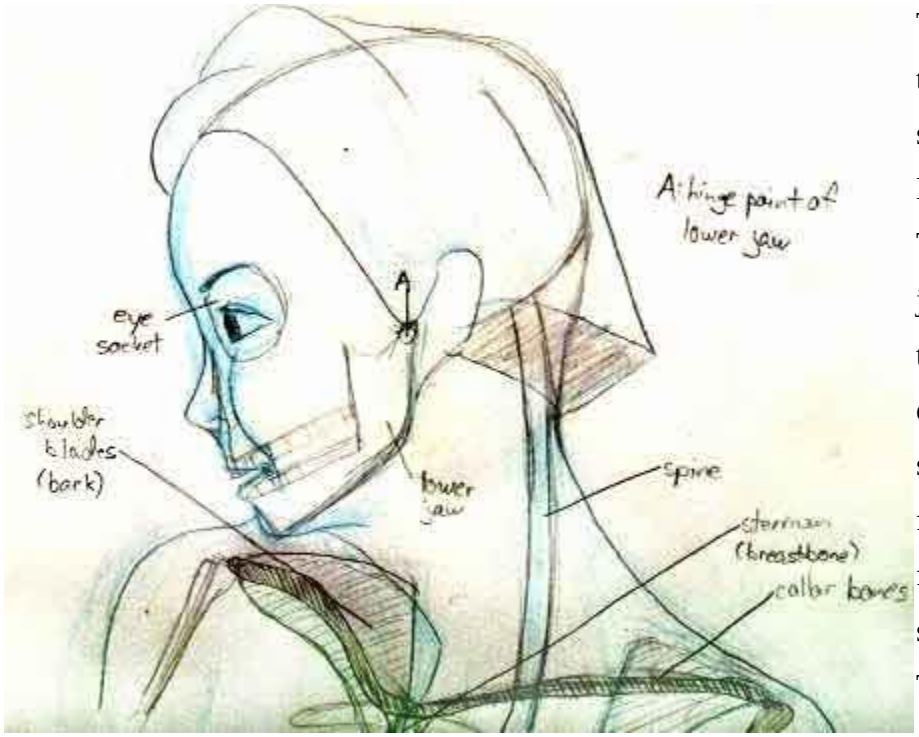
In this same closeup, you should notice that the back is not, as you might initially have thought, one big rectangle. There are two very dark lines that point towards the base of the spine. This is actually the waist, the thinnest point on the trunk (for both men and women). Now, these two lines are visible because her hip is bent away from her upper back. This is easily seen by comparing the directional lines of the bottom of her 'bra' and the top of her swimsuit. In my drawing, I drew the directional lines all around her trunk, noting the change of direction at the waist. Then, as I drew the contour lines of her back, I let them dip in, roughly following the directional lines. These overlapping lines give the illusion of depth, and are very important. Remember: Contour lines are only visible directional lines.

Discussion

The question now arises: why is the waist the thinnest part of the body? If you look at the drawing above, it becomes clear. Above the waist, there is the rib cage. Below, there is the hip bone. Both are made of hard bone. In the waist, however, there is nothing; this is where the spine bends. As there are no bones holding the flesh out, if you are thin enough it will "sag" (for lack of a better word) back into the body. Women generally have thinner waists then men, both because of an (over?)emphasis on weight loss, reduced muscles and a wider hip bone. I think that it is for this reason that so many artists find women easier to draw than men; the thin waist forms a neat division between the upper and the lower body, and it is far easier to draw to shapes at different angles than one complicated shape that changes angles. If a man were posing in the picture above, those neat inward lines would be much harder to see, if they were at all present; consequently, it would be much harder to draw convincingly.

One last note: in the drawing, you will notice two small triangles at her shoulders. Those are the shoulder blades. I'll talk about those more in a minute - for now, just look at them and remember where they are.

Head and Shoulders



To finish up, let's look at the head, neck and shoulders. Here we have Eden, in profile view. There's not much to say - just observe my notes in the drawing below. Some quick notes. The head is shaped roughly as a flattened ball from the front, and as a rounded square from the sides. The skull is very roughly sketches in here. Notice these things: First of all, when the mouth opens, it swings open from point A, just in front of the ear. Remember to show the entire jaw moving when a character is talking - just opening the mouth will look really weird. The eye is located in a hole in the skull. This hole is much larger than the eye itself. The eybrow is generally located along the top ridge of this hole. The backbone fits into the skull just behind the ears. Notice how the back contour of the head and neck is concave; as with the waist, there is no bone here so the flesh goes inwards. Also like the waist, men generally have less inwards curvature, as many of the back muscles begin in the neck in this area. Supermodels have almost no back muscles (they're called trapezoids) at all, making their necks very thin and giving the illusion of them being very long.

Getting down to the shoulders, you will notice that I have drawn a see-through view; you can see the shoulder blades. In front are the collar bones. Below the collar bones is the breast bone (or sternum). The breast bone holds up the ribs, and forms the main shape of the upper chest (or thorax). For our purposes, the collar bones are far more interesting. You will notice that, at the shoulders, they meet both the arm bones and the shoulder blades. You will also notice that they are reasonably flat, when the shoulders are not being shrugged. The collar bones and the shoulder blades together form something called the pectoral girdle, which I find one of the most usefull structures on the skeleton. Why? Because they are physical directional lines, reaching all the way around the chest! When I am drawing a figure that it even slightly bent towards me, be it from a model or from imagination, the first thing I draw (after the line of action) is the girdle, from which I project the rest of the trunk.

Final notes

OK, I've talked enough and spilt enough of my "secrets". 99% of the things you'll use when drawing, you must discover for yourself - tricks such as the pectoral girdle. You will not find hints like that in books, and I only gave it here as an example. These things you will discover will be your own secrets - the more you have, and the more you practice, the better you'll become. I will write one more anatomy lesson - detailing the limbs - but after that you're on you own.

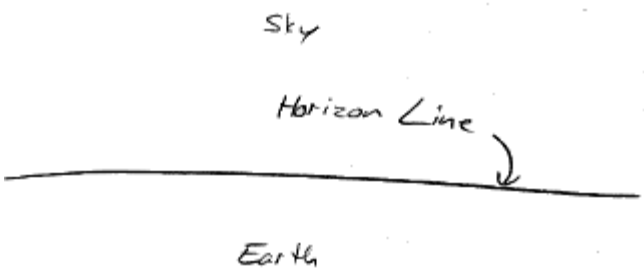
For more anatomy, hop on over to the goods page and get yourself an anatomy book. That's the best way to learn, unless you feel like attending a dissection. But that's not exactly life drawing, now, is it?

Perspective

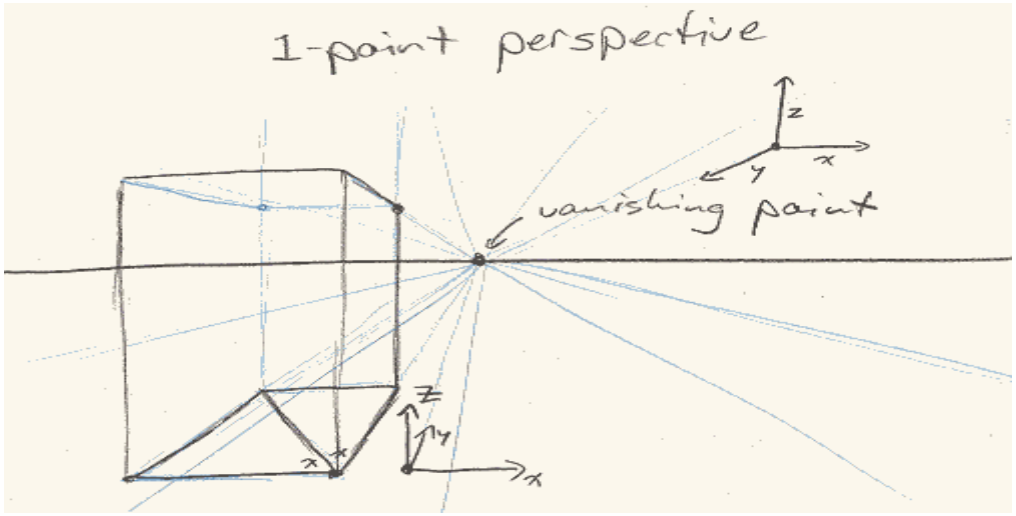
"Ahh, why do I have to learn perspective? Don't computers do all that boring stuff now?"

'Friad not. Computers do occasionally generate backgrounds for feature films now (most notable Tarzan) but the majority of backgrounds are still done by hand. And all those backgrounds are based on layouts, and all layout artists must be proficient in perspective. Not to mention that animators to animate on top of CG backgrounds must also know enough perspective to make the character look like they actually exist inside the background.

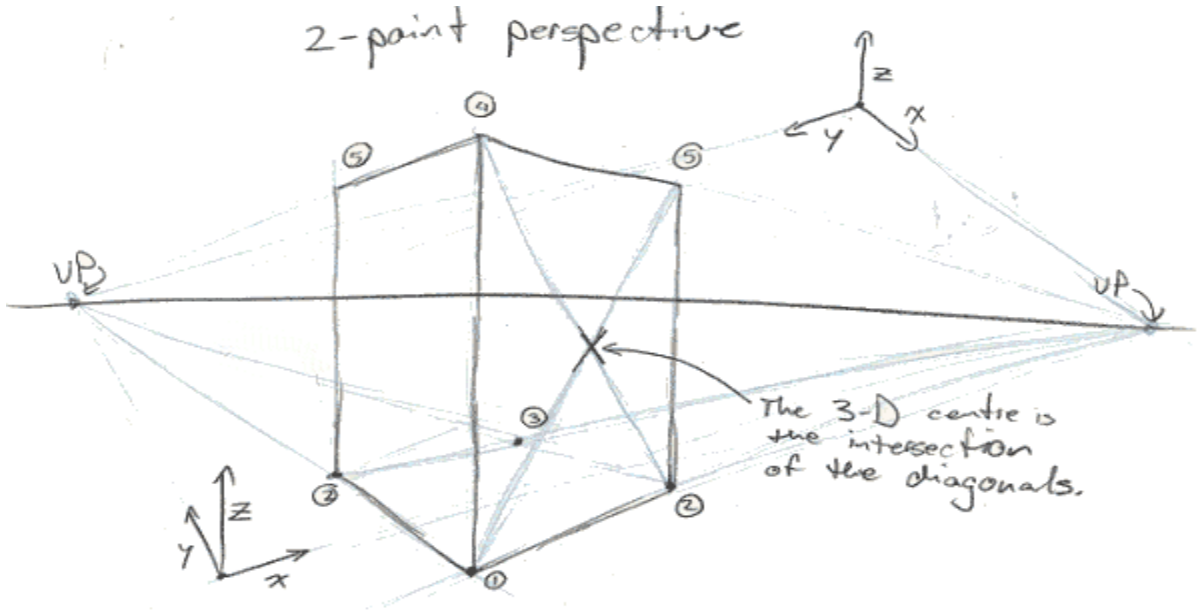
This is a **very** quick visual introduction to perspective.



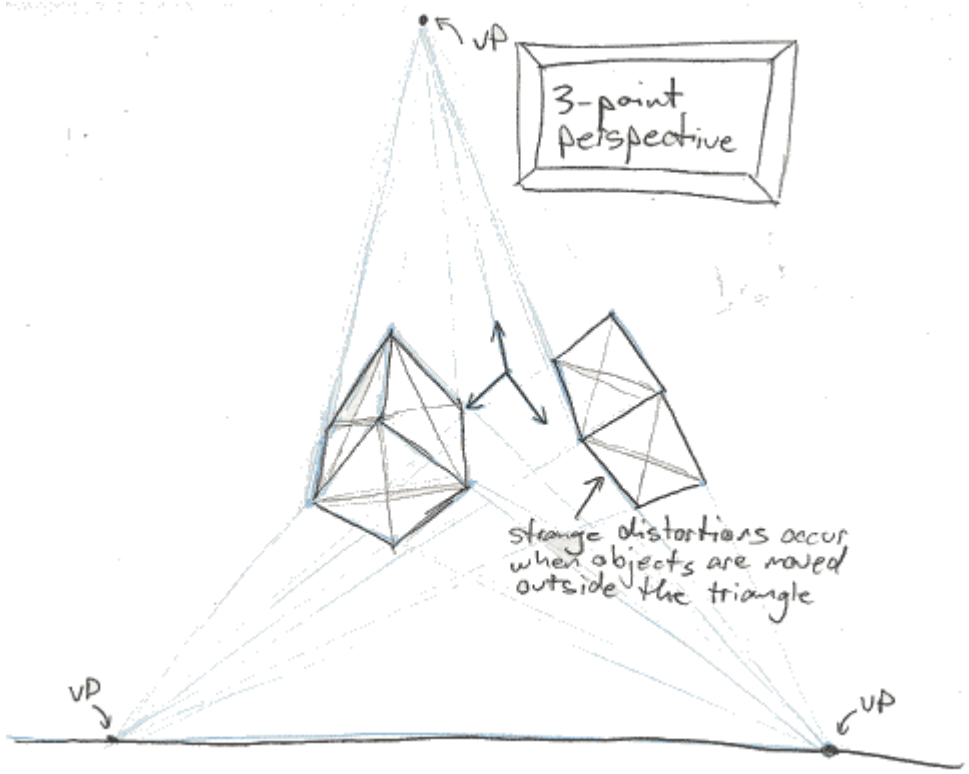
The horizon line is the imaginary line at which the sky hits the sea. It is sometimes but not always visible.



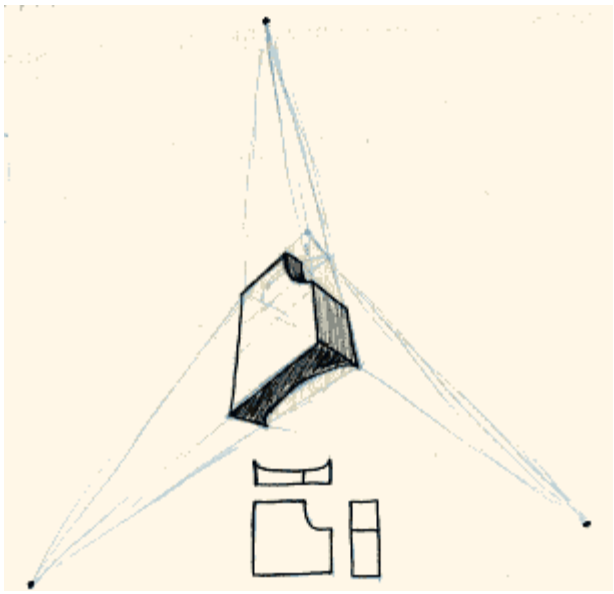
A **vanishing point** is a point to which straigh edges appear to converge. In 1pt perspective, all y-axis lines converge at a single point on the horizon line.



In 2pt perspective, all x-axis lines converge to one VP, and all y-axis lines towards another. Objects appear normal when between the two vanishing points; moving them outside can produce strange distortions.



In 3pt perspective, the z-axis lines also converge towards a vanishing point, located off the horizon line.



Irregular shapes, including humans, can easily be drawn within boxes constructed using perspective.

That's all folks!

Principles of Animation :

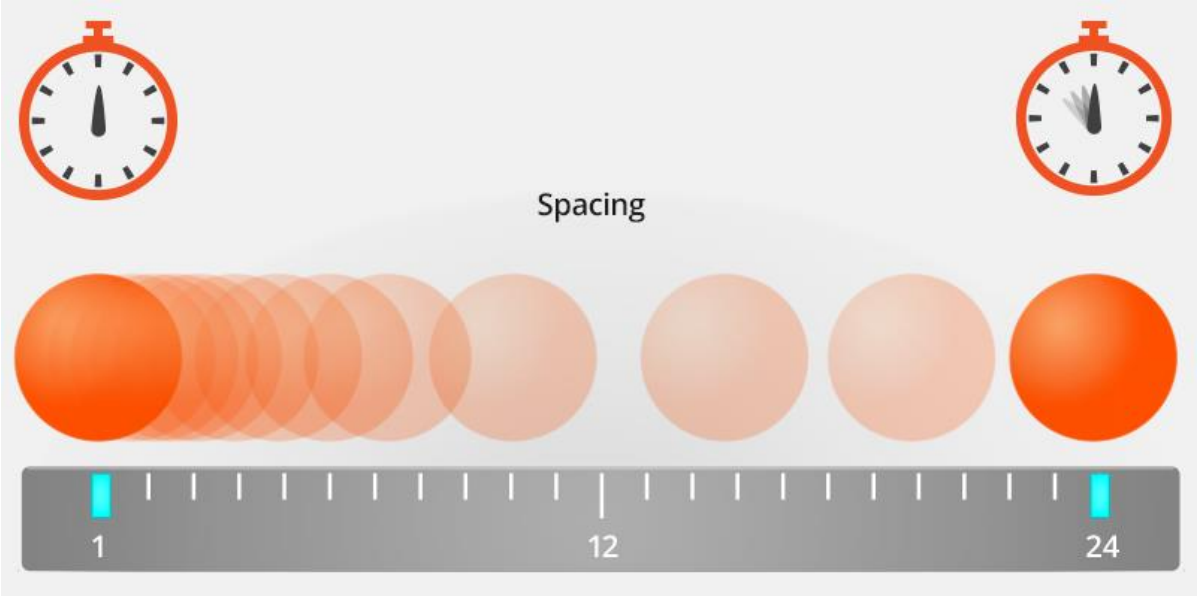
Before doing animation, every animator should follow these principles to create a good animation. These principles was evolved from past animation techniques but these principle are also very useful and essential for doing animation. In 1981 two bright Disney animators Ollie Johnston and Frank Thomas introduced twelve basic principles of animation to produce more realistic works. These principle are also applicable on present computer animations.

There are 12 basic principles of animation, they are-

1. **Squash and Stretch –**
   This is the most important principle of animation, it gives the sense of weight and volume to draw an object.
2. **Anticipation –**
   In this principle animator will create a starting scene like that it shows that something will happen, almost nothing happens suddenly.

3. **Staging –**
   Animator creates such type of scene which attract audience so that audience's attention is directed toward that scene.
4. **Straight Ahead –**
   In this principle, all frames are drawn from beginning to the end and then fill all the interval or scene.
5. **Flow through and overlapping action –**
   Two object's action have different speed in any scene can easily describe this principle.
6. **Slow in and Slow out –**
   When an abject have maximum acceleration in between and resist on the beginning and end will show this principle's working.
7. **Arc –**
   Arcs are present in almost all animation as no object will follow straight line and follows some arc in its action.
8. **Secondary action –**
   As with one character's action second character move shows the multiple dimension of an animation.
9. **Timing –**
   For playing a given action a perfect timing is very important.
10. **Exaggeration –**
    This principle creates extra reality in the scene by developing a proper animation style.
11. **Solid drawing –**
    In this principle, any object will created into 3D form to get realistic visualization of scene.
12. **Appeal –**
    Any character need not be as same as any real character but it somewhat seems to be like that which create a proper thinking in the audience's mind.

1. Timing and Spacing

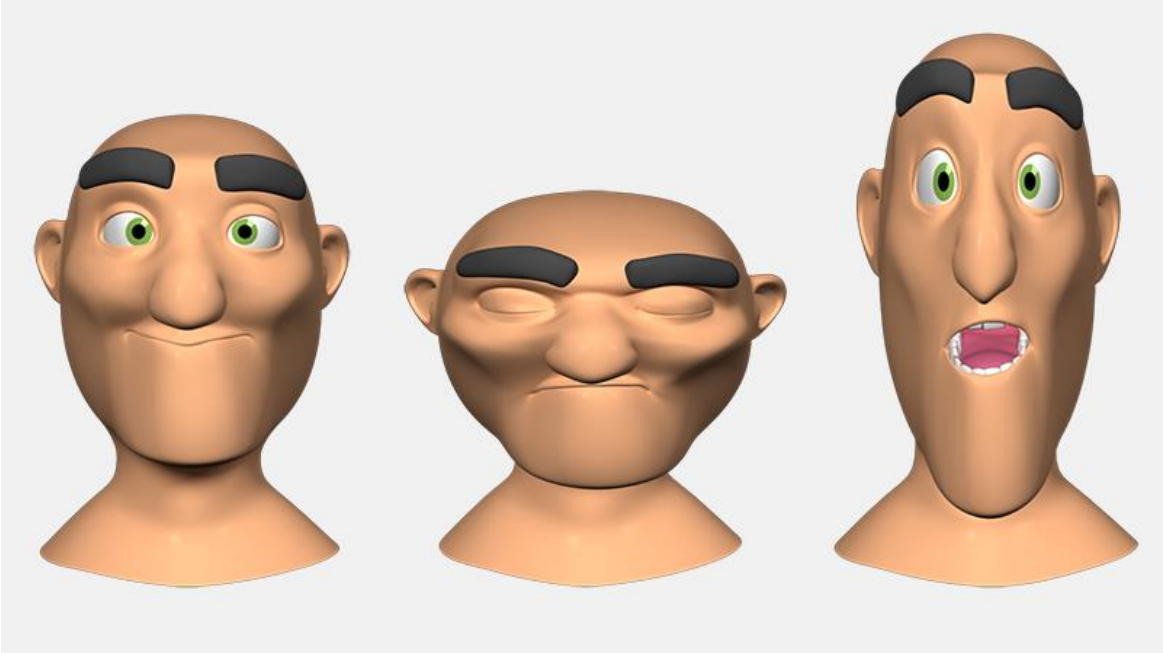


Timing and Spacing in animation is what gives objects and characters the illusion of moving within the laws of physics.

Timing refers to the number of frames between two poses, or the speed of action. For example, if a ball travels from screen left to screen right in 24 frames, that would be timing. It takes 24 frames or 1 second (if you're working within the film rate of 24 rates per second) for the ball to reach the other side of the screen. Timing can also establish mood, emotion, and personality.

Spacing refers to how those individual frames are placed. For instance, in the same example, the spacing would be how the ball is positioned in the other 23 frames. If the spacing is close together, the ball moves slower. If the spacing is further apart, the ball moves faster.

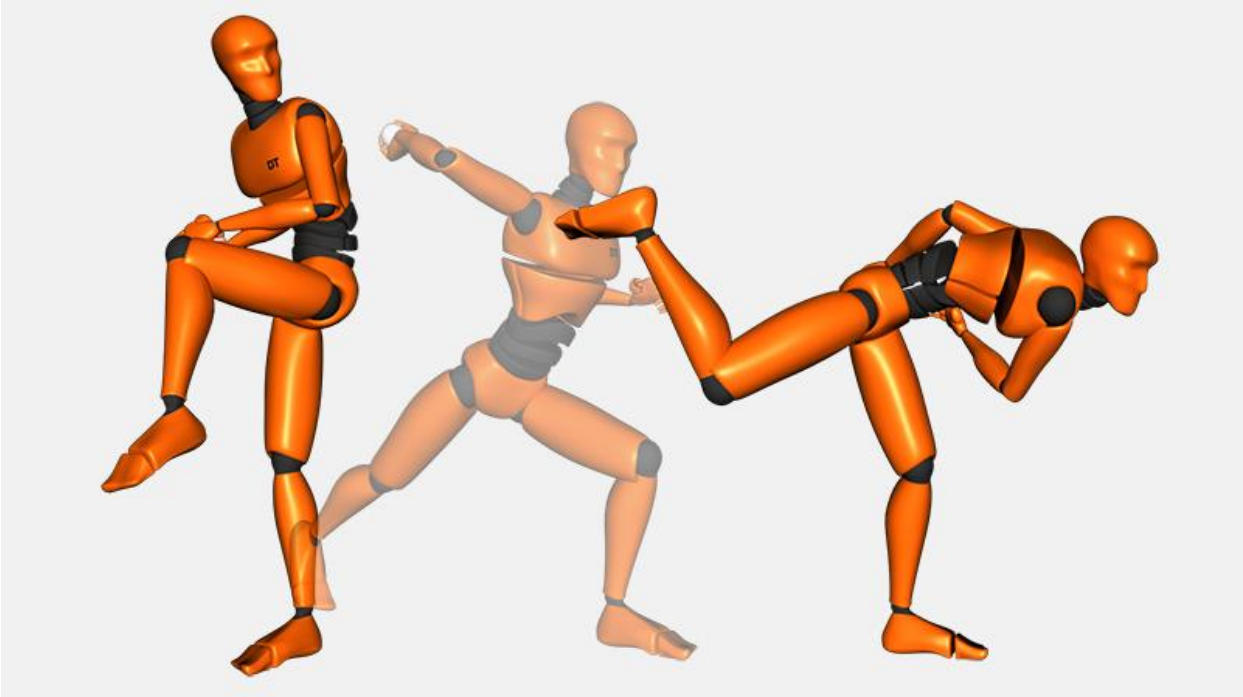
2. Squash and Stretch



Squash and stretch is what gives flexibility to objects. The easiest way to understand how squash and stretch work is to look at a bouncing ball. As the ball starts to fall and picks up speed, the ball will stretch out just before impact. As the ball impacts the ground, it squashes before stretching again as it takes off. Please note, the volume of an object doesn't change. In the case of the ball, when it is squashed or stretched, the width and depth need to correspond accordingly.

There's a lot of squash and stretch happening in real life that you may not notice. For instance, there's a lot of squash and stretch that occur in the face when someone speaks because the face is a very flexible area. In animation, this can be exaggerated. Squash and stretch can be implemented in many different areas of animation to add comical effect or more appeal, like for the eyes during a blink or when someone gets surprised or scared.

3. Anticipation



Anticipation is used in animation to set the audience up for an action that is about to happen, and is required to sell believable movements.

An easy way to think about this is before a baseball player pitches the ball, they first need to move their entire body and arm backward to gain enough energy to throw the ball forward. So, if an animated person needs to move forward, they first must move back. Or, if a character is reaching for a glass on a table, they must first move their hand back. This not only gets up their momentum, but it lets the audience know this person is about to move.

Other cases where anticipation is used include when a character looks off screen when someone is arriving, or when a character's attention is focused on something they are about to do.

4. Ease In and Ease Out

As any object moves or comes to a stop, there needs to be a time for acceleration and deceleration. Without ease in and ease out (or slow in and slow out), movements become very unnatural and robotic.

As a car moves away from a stop, it doesn’t just reach full speed in an instant. It must first gain speed. As it comes to a stop, it doesn’t go from sixty to zero in the blink of an eye. Instead, it slows down until it reaches a complete stop.

The same must be accomplished in animation and the easiest way to accomplish ease in and ease out is to utilize the principle of spacing. As a character stands up from a sitting position, the spacing of each pose will be closer together at the start so that they can ease into the movement. As they stand up, they will ease out of the movement by spacing the poses further apart at the end of the action. Without this acceleration and deceleration of actions, everything would be very abrupt and jerky.

5. Follow Through and Overlapping Action

In real life, everything moves at different speeds and at different moments in time, so follow through and overlapping action is important for capturing realistic and fluid movement.

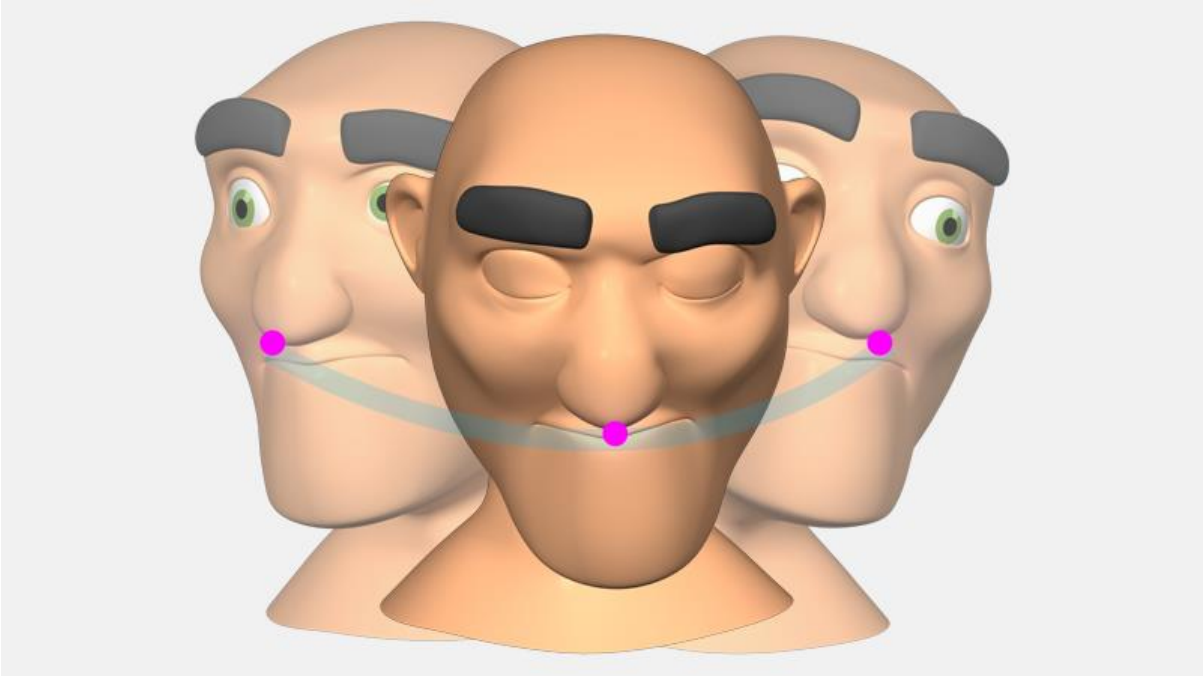
Follow through is the idea that separate parts of the body will continue moving after the character has come to a stop. As a character comes to a stop from a walk, the arms may continue forward before settling in a down position. This could also be the case with articles of clothing.

Overlapping action (also called “drag” or “lead and follow”) is very similar in that it means different parts of the body will move at different times. An example of overlapping action is when a character raises their arm up to wave: The shoulder will move first, then the arm, and then the elbow, before the hand lags behind a few frames. You can also see this

when a blade of grass waves in the wind. The base moves first and then the rest of the grass follows behind at different rates, giving it that waving motion.

Additionally, characters who are remaining still need to display some sort of movement (blinking eyes, breathing, etc.) to prevent the animation from becoming “dead.” This is called “moving hold.”

6. Arcs

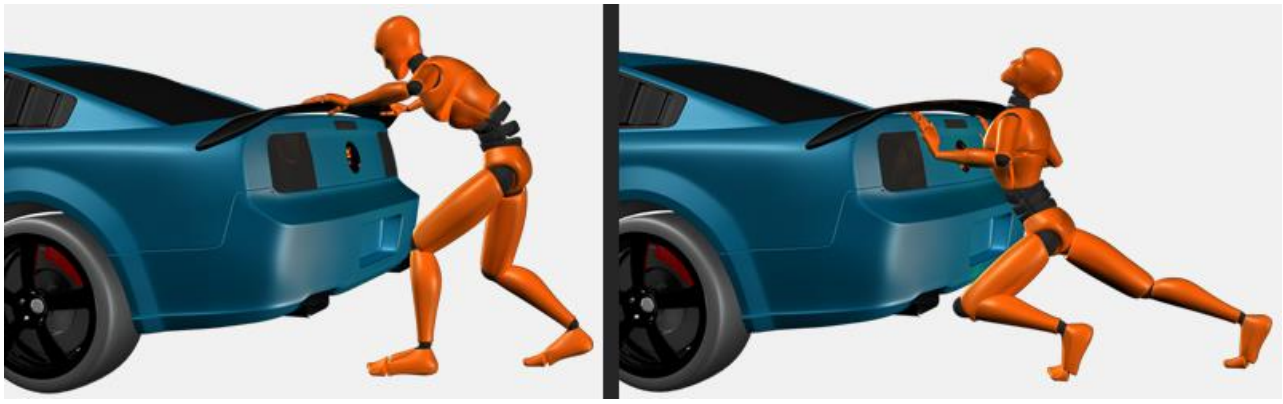


Everything in real life typically moves in some type of arcing motion. Since it's unnatural for people to move in straight lines, you should adhere to this principle of animation to ensure you get smooth, realistic movements. The quicker something moves, the flatter the arc and the broader the turn. The only time something would move in a perfectly straight line is a robot.

If a character is turning his head, he will dip his head down during the turn to create an arcing motion. You also want to ensure that more subtle

things move in arcs. For example, when a character walks, even the tips of their toes should move in a rounded, arcing motion.

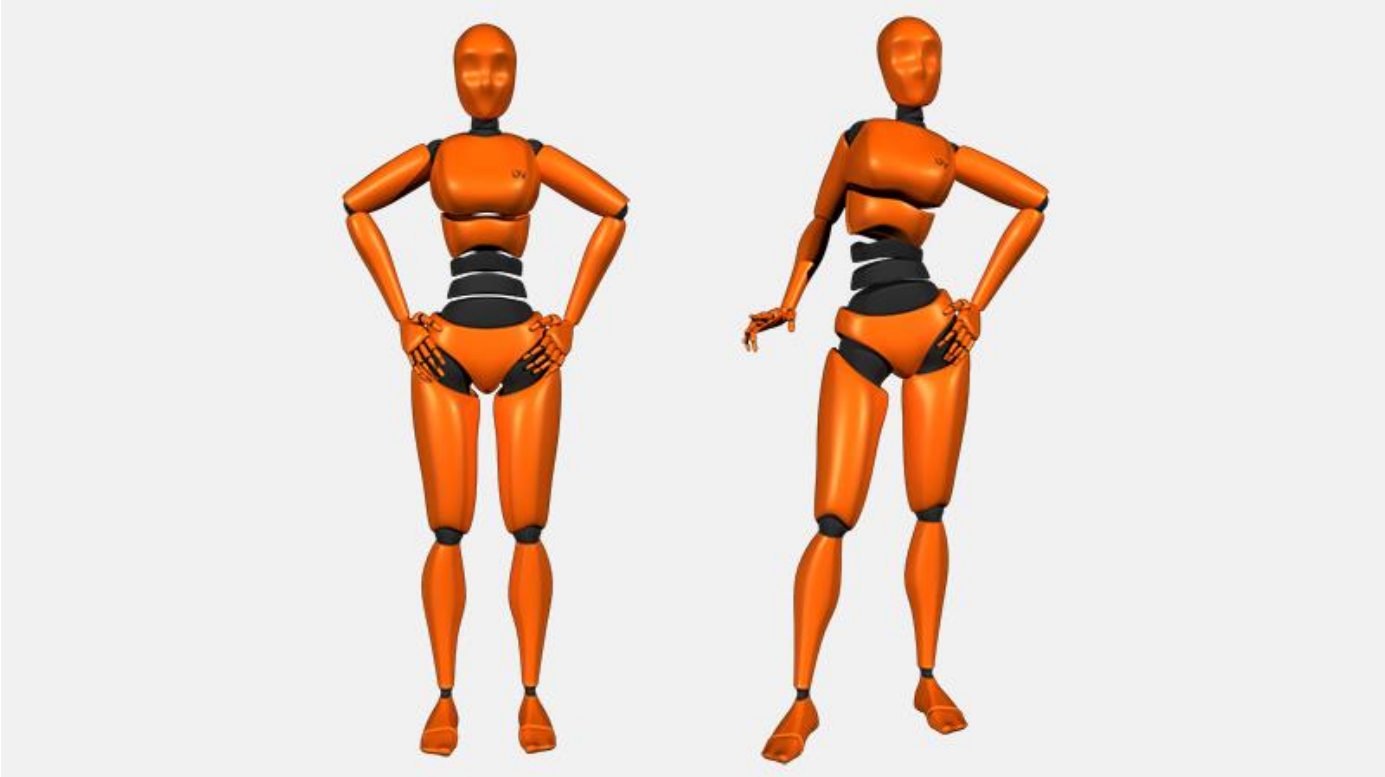
7. Exaggeration



Exaggeration is used to push movements further, adding more appeal to an action, and should always be implemented to some degree.

Exaggeration can be used to create extremely cartoony movements including physical alterations or supernatural elements. Or, exaggeration can be incorporated with a little more restraint for more realistic actions. But, even then you can still use exaggeration to make a more readable or fun movement while still staying true to reality. So, if a character is preparing to jump off a diving board, you can push them down just a little bit further before they leap off. Alternatively, you can use exaggeration in the timing to enhance different movements or help sell the weight of a character or object.

8. Solid Drawing



In 2D animation, solid drawing is about creating an accurate drawing in terms of volume and weight, balance, shadow, and the anatomy in a pose. With 3D animation, animators need to think about how to pose out your 3D character rig to ensure there is correct balance and weight, as well as a clear silhouette. Avoid “twinning,” which is creating a mirrored pose across to the other side (both arms on hips or both hands in pockets) because this creates a rather boring and unappealing pose.

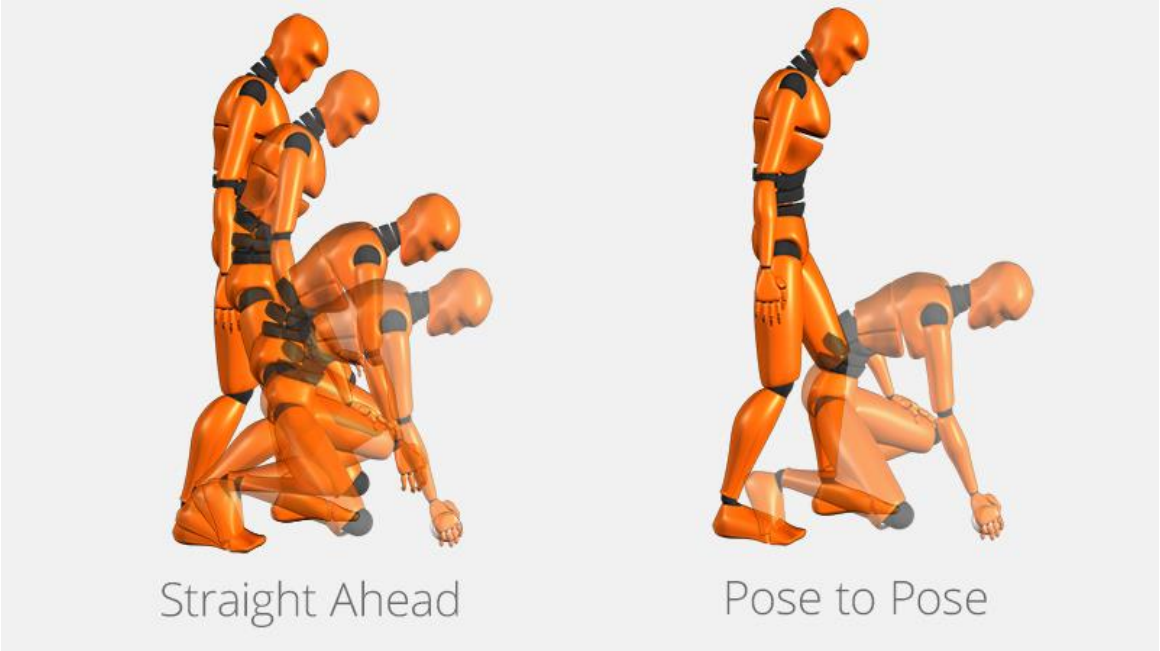
9. Appeal

This principle can really come down to adding more appeal (charisma) in many different areas of your animation, such as in posing. The most obvious example, however, is appeal in the character design because you want to have a character that the audience can connect with or relate to, whereas a complicated or confusing character design can lack appeal.

You can find areas on the character to push and exaggerate in order to create a more unique design that will stick out in your audience's memory. One example is to simply exaggerate the jawline or push the youthfulness in the eyes. Either of these can help create more appeal.

Keep in mind that appeal is also required for villains.

10. Straight Ahead Action and Pose to Pose



Straight ahead action is a very spontaneous and linear approach to animating and is animated from start to finish, frame by frame. With this, you'll create each pose of the animation one after the other. So, if your character is landing on the ground after jumping in the air, you would create the poses where he is standing, then the poses where he is beginning to kneel down, and then completely crouched. In other words, you're really working through the animation as you're going to make quick action fluid and dynamic.

With pose to pose, the animation is much more methodical, with just the most important poses required to properly tell the story. You would animate the character landing on the ground after jumping in the air by using fewer poses (standing and crouched). This allows for more simple work and ensures the proportions and timing are correct before you add more intervals later, and is great for slow, dramatic, or emotional scenes.

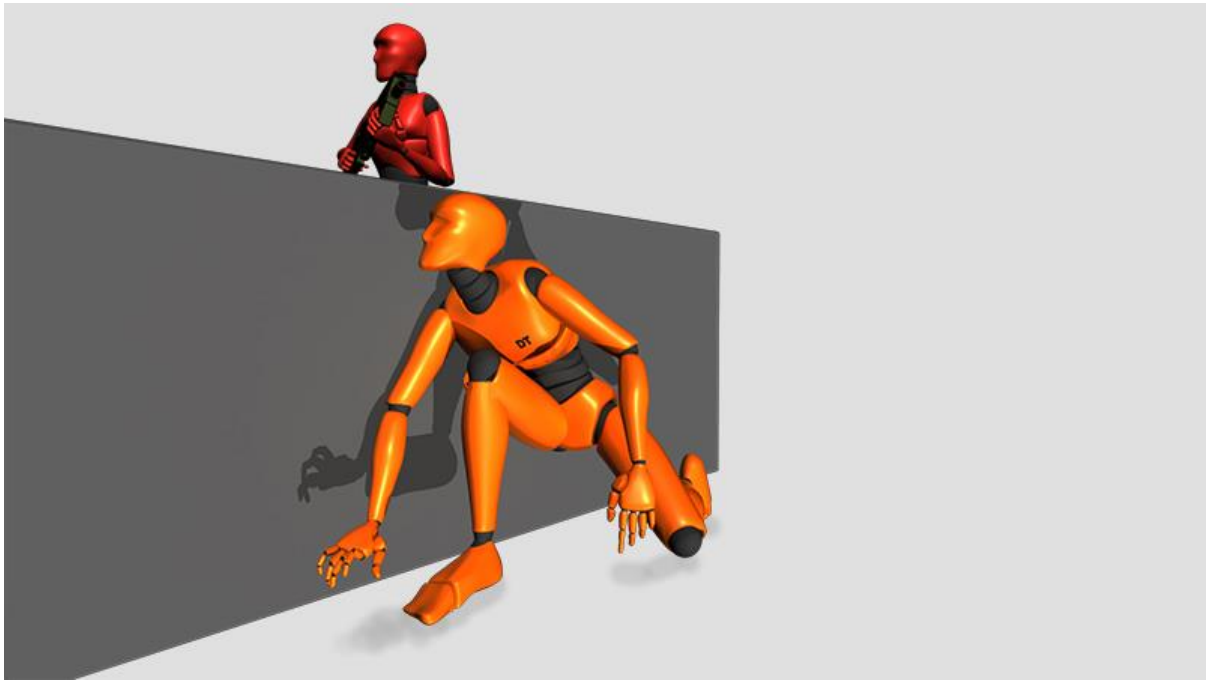
Often, these two approaches are used in combination to great effect.

11. Secondary Action

Secondary action refers to the actions that support or emphasize the main action to breathe more life into the animation and create a more convincing performance. It’s important to remember that the secondary action should typically be something subtle that doesn’t detract from the main action happening (perhaps even thought of as a subconscious action). For this reason, dramatic movements take priority over things like facial expressions.

Let’s say a character is talking to another character in a waiting room. The two of them talking would be the main action, but if one of them begins tapping their foot nervously, that would be the secondary action. Other examples would be a character whistling, leaning on a wall, or crossing their arms while a primary action is taking place.

12. Staging

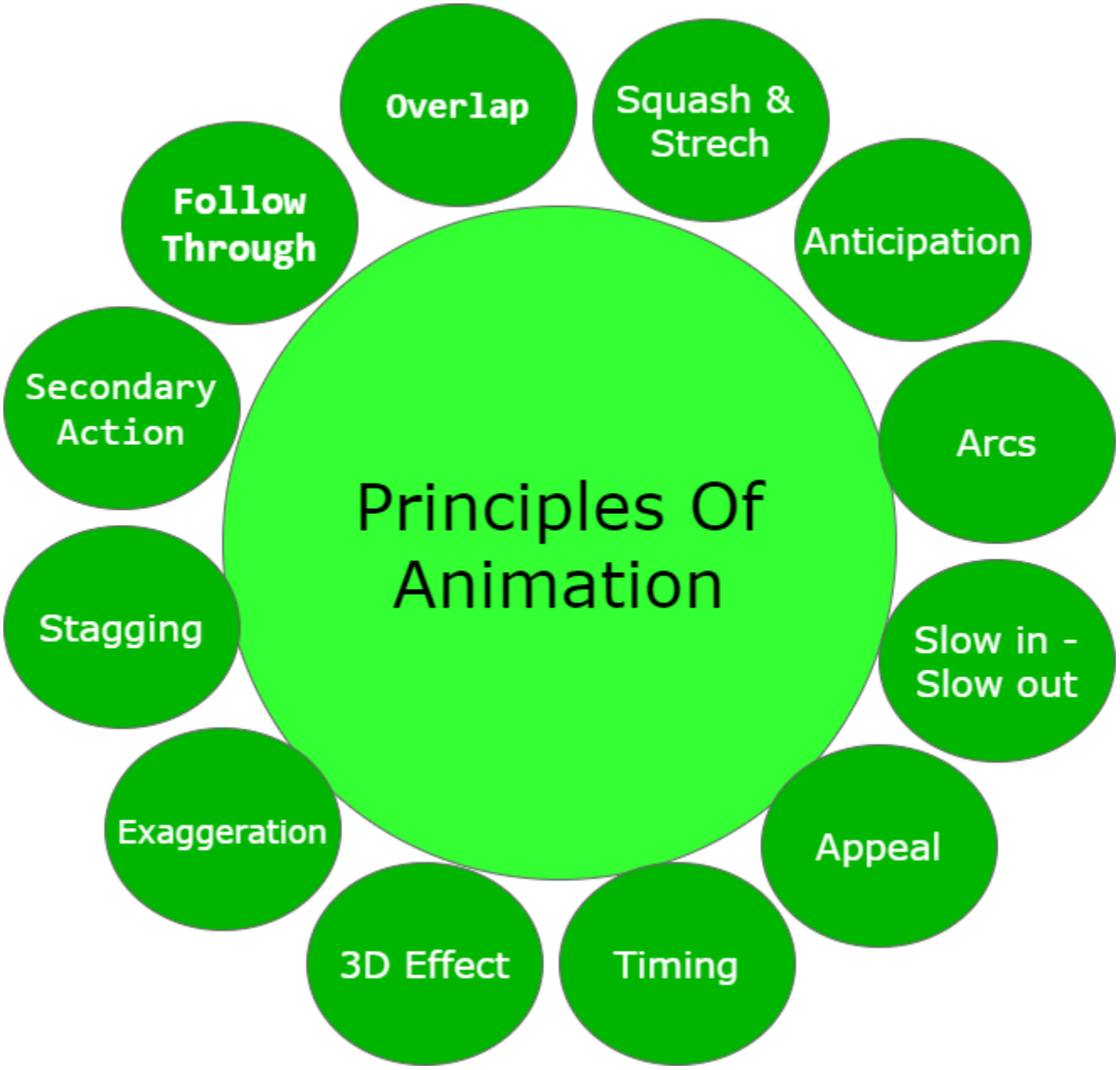


Staging is how you go about setting up your scene, from the placement of the characters, to the background and foreground elements, the character’s mood, and how the camera angle is set up. Staging is used to make the purpose of the animation unmistakably clear to the viewer. You want to keep the focus on what you want to communicate to the audience (and avoid unnecessary detail) so they don’t become confused.

Principles Of Animation

Animation is defined as a series of images rapidly changing to create an illusion of movement. We replace the previous image with a new image which is a little bit shifted. Animation Industry is having a huge market nowadays. To make an efficacious animation there are some principles to be followed.

Principle of Animation:



There are 12 major principles for an effective and easy to communicate animation.

1. **Squash and Stretch:**
   This principle works over the physical properties that are expected to change in any process. Ensuring proper squash and stretch makes our animation more convincing.

For Example: When we drop a ball from height, there is a change in its physical property. When the ball touches the surface, it bends slightly which should be depicted in animation properly.

2. **Anticipation:**
   Anticipation works on action.Animation has broadly divided into 3 phases:

1. Preparation phase
2. Movement phase
3. Finish

1. In Anticipation, we make our audience prepare for action. It helps to make our animation look more realistic.
   For Example: Before hitting the ball through the bat, the actions of batsman comes under anticipation. This are those actions in which the batsman prepares for hitting the ball.

2. **Arcs:**
   In Reality, humans and animals move in arcs. Introducing the concept of arcs will increase the realism. This principle of animation helps us to implement the realism through projectile motion also.
   For Example, The movement of the hand of bowler comes under projectile motion while doing bowling.

3. **Slow in-Slow out:**
   While performing animation, one should always keep in mind that in reality object takes time to accelerate and slow down. To make our animation look realistic, we should always focus on its slow in and slow out proportion.
   For Example, It takes time for a vehicle to accelerate when it is started and similarly when it stops it takes time.

4. **Appeal:**
   Animation should be appealing to the audience and must be easy to understand. The syntax or font style used should be easily understood and appealing to the audience. Lack of symmetry and complicated design of character should be avoided.

5. **Timing:**

Velocity with which object is moving effects animation a lot. The speed should be handled with care in case of animation.

For Example, An fast-moving object can show an energetic person while a slow-moving object can symbolize a lethargic person. The number of frames used in a slowly moving object is less as compared to the fast-moving object.

1. **3D Effect:**
   By giving 3D effects we can make our animation more convincing and effective. In 3D Effect, we convert our object in a 3-dimensional plane i.e., X-Y-Z plane which improves the realism of the object. For Example, a square can give a 2D effect but cube can give a 3D effect which appears more realistic.

2. **8. Exaggeration:**
   Exaggeration deals with the physical features and emotions. In Animation, we represent emotions and feeling in exaggerated form to make it more realistic. If there is more than one element in a scene then it is necessary to make a balance between various exaggerated elements to avoid conflicts.

3. **Stagging:**
   Stagging is defined as the presentation of the primary idea, mood or action. It should always be in presentable and easy to manner. The purpose of defining principle is to avoid unnecessary details and focus on important features only. The primary idea should always be clear and unambiguous.

4. **Secondary Action:**
   Secondary actions are more important than primary action as they represent the animation as a whole. Secondary actions support the primary or main idea.
   For Example, A person drinking a hot tea, then his facial expressions, movement of hands, etc comes under the secondary actions.

5. **Follow Through:**
   It refers to the action which continues to move even after the completion of action. This type of action helps in the generation of more idealistic animations.
   For Example: Even after throwing a ball, the movement of hands continues.

6. **Overlap:**
   It deals with the nature in which before ending the first action, the second action starts.
   For Example: Consider a situation when we are drinking Tea from the right hand and holding a sandwich in the left hand. While drinking a tea, our left-hand start showing movement towards the mouth which shows the interference of the second action before the end of the first action.