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Pixel art lesson 10: There's a lack of animation around here!

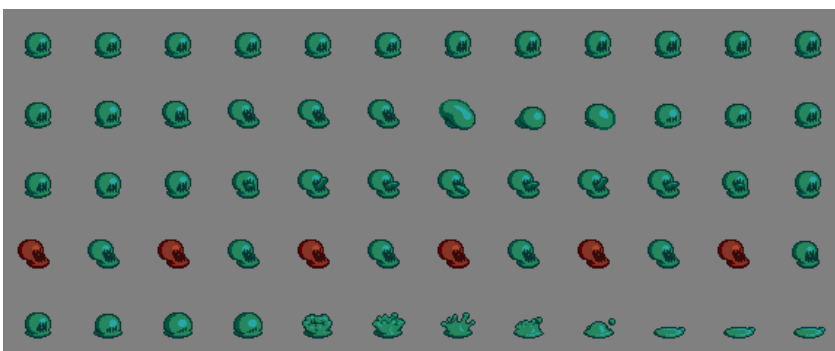
By [Thomas Chassin](#) | on October 1, 2012 10:00:00 PM | Categories: [Courses](#) , [Graphic design](#) , [Pixel art](#)

No tutorial on pixel art, moreover in the context of creating a video game, can ignore animation, which is why today we offer you an article on the subject.

Let's start with a quick explanation of the principle of animation as we will consider it here.

If you've ever seen a film reel, you know that it is made up of a series of still images displayed very quickly one after the other (24 images/second in general). Animation in pixel art is based on this same principle: the display of a succession of frames or *frames* , although the number of unique images per second is generally much lower than that of classic animation, resolution requires.

I will not talk about the management of *frames* within software or their organization within a file, since that depends on the way your image is read, but know that in the vast majority of cases, *frames* are all bundled into a single image called *spritesheet* .



A little preparation.

To your pencils!

Before animating, it is important to know roughly what you want to achieve as a result. The easiest way to do this is to put it on paper: yes, you will draw it for me (don't be afraid, no need to be good)! Of course, it would be absurd to draw all the *frames*, but it is important to visualize the main "passing points" or *key frames* of your animation, ie the key stages which define your movement, but also the stages of complex movements, such as transformations that are not located in the image plane (a platform game character turning on itself, for example).

This is called animation by parts or *pose to pose animation*: we decide on a certain number of intermediate steps then we add *frames* of transitions between them. Drawing, even in a summary way, the *key frames* will allow you to better visualize the work to be done and will greatly help you when creating your *sprite*.

Let's take an example to clarify this somewhat obscure subject: a stroke of the sword. This is divided as follows: the character is at rest, he cocks his shot, hits then recocks, which makes a total of 4 "passing points" to be defined in order to be able to animate your character, the rest of the images serving as a transition between these.



Referrals are your friends for life.

If you're not sure how your animation cuts out, the big secret of life and death is to document yourself, both on the animation side (look at what is done in general) and on the reality side (nothing better than observation to get rid of your *preconceptions*).

Note that for character animation, it is possible to mimic the movements yourself, but this option is not recommended when you are at your workplace, or even in public in general. Normally, this should be enough to get a satisfactory cut of the animation, but don't worry if you experience some difficulties, the helping hand comes with practice, and if possible constructive criticism.

A bit of theory.

Two, three generalities



Let's now go into the more technical part of this article, if you don't mind (in fact, you have no choice). For your animation to be successful, it is important to have a good command of the distribution of movement in the *frames*. Indeed, movement is defined by the difference in position between two representations of the same element from one *frame* to another.

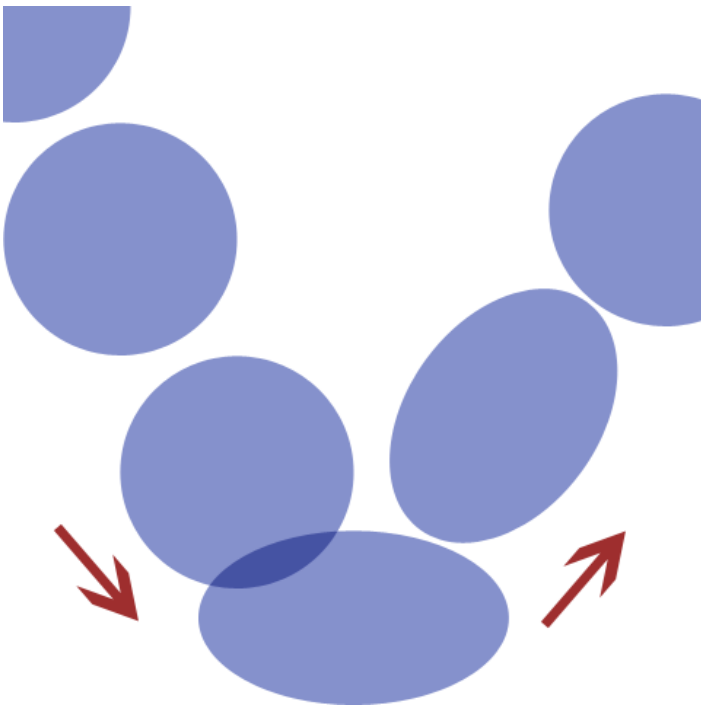
In fact, the more frames you dedicate to a movement, the slower it appears, and conversely, the more intermediate *frames* you remove, the faster it appears. The first logical consequence is that duplicating a *frame* makes it possible to mark a pause in the movement, the second is that the more you seek to represent rapid movements, the more you will need a high number of *frames* for the same time interval (we can also talk about sampling frequency or *sample rate* for the intimate).

A bit of dynamism and stylization.

Elasticity.

If you don't live in a colony of golems in the depths of a cave, you may have noticed that there are rigid materials and others that are more elastic. The latter have the ability to deform under the action of the forces applied to them.

The technique of *squash and stretch* (compression and stretching) consists of stretching or compressing a body in contact with a solid, while maintaining its volume (this is important). The most glaring example is that of a bouncing ball: first spherical, it crashes upon contact with the ground, then stretches when it bounces. This principle can be generalized to many movements in animation, whether we animate a face, a character, an object, etc.



[A quick preview in .gif](#)

The stronger the compression and crushing, the more a “toon” effect is obtained. This principle makes it possible to make actions more fluid and to give them more force.

Inertia and kinetics.

Don't be afraid, I'm not going to give you a physics lesson! forget your lessons, we are only going to focus here on certain physical effects useful for animation, namely that a body in motion tends to remain so and that the same is true for a stationary body. Three effects result from this:

Continuity of movement.

The continuity of motion (or *follow through*) has the consequence that when a non-rigid body stops, its parts remain in motion for a few moments before stopping in turn. We can observe this phenomenon in a very simple way: take a few steps and then stop. Unless you have your entire upper body in a cast, your arms will not become absolutely still the second you stop moving forward: they will continue to move for a few moments due to the accumulated kinetic energy and then they will stop moving, move in turn.

The pulling effect.

The traction effect (or *drag*) is very close to the continuity of the movement: it is more precisely its opposite. The traction effect can be observed when a force is exerted on a flexible body, for example fabric. The whole body will not move simultaneously if you pull on it: first will come the part you pull, then the rest, from the point of pull to the extremities.

The overlap of movements.

The overlapping of movements (*overlapping action*) is the result of the combined action of the two preceding phenomena. When a body passes from a movement A to a movement B, there is a moment when the two movements "overlap": the part at the origin of the movement B moves in agreement with the latter but the rest of the body, because of the *drag*, still continues to follow movement A. There is therefore the coexistence of two possibly

The transitional stages.

You thought the inertia was over? Nay my braves: here it is again! Any moving body, unless it suddenly receives or transfers a significant amount of kinetic energy, goes through a regime called transient at the start and end of movement. Concretely, this means that the body needs to accelerate when a movement is initiated, and that it then needs to decelerate before stopping. These transition phases, in addition to making your animation more believable, can convey additional information to the player. For example, a slow acceleration and/or an equally slow deceleration indicates that the moving object is heavy: think of a mace for example, it is a slow weapon, but once the shot is fired, *Monster Hunter* are a good example).

To show off at social dinners (continued): *motion blur*.

Motion blur, or motion blur for those angry with Shakespeare and his pals, is an optical phenomenon we live with every day: when observing fast motion, one can see a blurry trail behind the body moving. This trail is actually due to retinal persistence and is just an optical illusion. Does that give you a nice leg? And yet it is a very useful principle for animation.

During a very fast movement, there is a significant displacement which takes place from one *frame* to another, which risks making your animation difficult to understand by the spectator, and this risk increases proportionally to the complexity of the trajectory followed.

So how do you combine rapid movement with understandable animation? An idea? If you answered "*Motion blur* !" », we may do something with you, otherwise go back to square one.



To achieve a successful *motion blur*, the best is often... not to worry about it! Indeed, the motion blur comes **after** the cutting of your animation and the realization of your *frames*. The ideal is to make your animations by noting the *frames* requiring motion blur, then come back to work on them after the fact. If you use software that manages layers (which the whole team highly recommends), draw the trajectory followed by the moving element from one *frame* to another on a separate layer, it will serve as your basis for making motion blur. After that? Well, all that remains is to follow a few rules:

- The "drag" is between the starting position and the arrival position, and follows the trajectory of your movement.
- The faster a movement, the longer the "drag".
- Treat your drag as a solid, perspective rules and the like normally apply to it.
- You can use a gradient to accentuate the blurring effect.

Protips.

Start simple.

If you start by making hyper-complex *frames* with multi-source lighting, *ambient lighting* and all that stuff, you're going to cry your heart out the day you realize you messed up your animation. Start by making shapes based on solid colors to animate quickly. Once you are satisfied with the animation, increase the level of detail gradually, checking each time that the result meets your expectations.

Animate the different parts separately.

Work with layers. Seriously. It is infinitely easier to modify an animation whose elements are on separate layers. The ideal would be to create one layer per element if you are not sure. Also note that some animations only rely on certain elements moving relative to each other, without any deformation whatsoever.

Take the animation as a "whole".

When you work on an animation, whatever it is, you are working on a set of successive *frames*. The important thing is that your animation is successful, not that each individual *frame* is an impeccable masterpiece on which you spent half an eternity.

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It is an inevitable fact. Just watch any animated short or feature film and pause randomly as the characters change poses. The likelihood of them looking ridiculous is very high, and yet the animation **as a whole** is of good quality.

The strength of details.

The difference between a good animation and a very good animation lies (among other things) in the care given to details or secondary actions. These secondary actions have the main role of establishing the main animation, making it livelier and giving it more strength. For example, when a character moves and wears a cape and/or has long hair, it is not static: it reacts to the main action, here walking. However, it is important to prioritize the different actions, so that the main action is clearly identifiable: if this is not the case, all the work done on the secondary animations will only serve the action as a whole. .

And now drool over what the big guys are doing!

And cry a bit on the way, it will do you good.

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By an anonymous on February 23, 2020 8:55:36 PM



Thank you for this great and comprehensive course.

By an anonymous on September 8, 2014 6:52:56 PM



Congratulations for this superb tutorial, probably one of the most clear, well written and interesting that I have ever read!

By an anonymous on April 17, 2014 10:51:56



Indeed. It feels good to shed a little tear.

Thanks for this great tutorial!

By an anonymous on August 11, 2013 5:53:25 PM



great tutorial

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By nemj on May 15, 2013 12:43:06



very interesting and very pleasant to read, frankly thank you!

By Rose on October 22, 2012 9:22:18 PM



Thanks for this tutorial, I learned a lot! Thanks again for your "lessons"!

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