We get a lot of questions about what the best types of digital cameras and equipment are used to make your animated puppets move on screen. This equipment includes digital still or digital camcorders, digital computer capture cards, capturing software, and editing software. You may even be using sound recording and sound editing programs as well, and if you really get into things you may use plug-in programs that add motion blur. So as you can see there is no simple way to explain this process of doing things digital, but there are some basic rules that you need to know to get started.

The first thing you will need is a digital camera. We recommend still cameras if the camera has a video out option to preview your images on your computer screen while animating. The Olympus C 4000 "also the C-5050 and C-5060 which are newer" is a perfect camera for this, especially since it has all manual settings built in, and video out. Seeing your images on screen lets you use the image as a reference. But you can use a video camera along side a still camera to preview the animation.

*Digital still cameras that are 3 megapixels and up are highly recommended when used with Stopmotionpro's picture import feature. You will get usually more then broadcast quality results! Stop Motion Pro can be used to compile all your digital still images into an animation .avi file for editing.

When it comes to digital still cameras, using a flash is not a good idea, and having to touch your camera while it is mounted on a tripod is also not the best idea since your image will be shaky. So an infrared remote control would be helpful to snap images, a rigged cable release, and an extra sturdy tripod. The kind you should look for should have these options:

1: Firewire or USB output
4: Takes stills as well as live action video
2: Analog output
5: Has a sturdy tripod mount
3: S-Video output "optional but better"
6: Is within your budget

If you find a camera that has all three outputs, then you will have the most flexibility when

choosing a capture card for your computer. A capture card allows you to use a program like Stop Motion Pro to play your animation back as you animate to see how the motion is working. This is why having an analog output on your camera is helpful. You hook this output up to a digital capture card in your computer in order to view the image from your camera.

One all around camera I used to use for animation and own is a Digital 8 Sony DCR-TRV730. It also allows you to capture fairly high quality still images on tape or memory sticks if you choose to experiment with those functions. It also has many options like low light capabilities and shutter speeds which resemble using 800ASA film and also changing frame speeds as in a film camera.

For a good idea of how many capture cards there are, and what they are bundled with you should check this site . Although you can probably find more cards at more affordable prices it gives you a good idea what you have to choose from. We recommend a capture card with S-Video input since the quality is somewhat nicer then analog.

There are some exceptions to capture cards in one instance. If you decide to go with the final camera option - a web cam, you don't normally need a capture card. Just an empty cable slot called a USB port. This is a rectangular hole that you can insert the end of the web cams cable into for it to work. The guy who runs Bluntmation uses an Intel CS330 web cam . This camera has good resolution and is easy to use with popular stop motion software.

Another option are analog based color 3 CCD broadcast cameras used for home and business surveillance. One such model is the Hitachi HV-C20. Instead of explaining these cameras, Mike Brent has a good section about them here. Our argument against these cameras are that the quality is good, but digital still cameras are better quality for the same price. It depends of course what your preferences are. The only good part to me are the different lenses you can use.

The final camera option are the newer HDV cameras. These cameras are replacing the usual cameras that use casette tapes and are purely digital. Editing HDV video is hard to do on slow computers, however capturing single frames is possible within programs like Dragon Stop Motion and Stop Motion Pro HD. What you need is the appropriate HDV capture card, such as a Black Magic card . They run a little under two hundred dollars and give you a live image directly

from your HDV into your computer without compression. This is the best quality image you can get of all the solutions. I own a Canon Vixia HF100 and am happy with the quality. It is about five hundred dollars.

Once you have your camcorder and capture card, or a still camera, or a broadcast camera - you need the proper software to get your single frames turned into animation. Here are just some of the programs that are either shareware or freeware that will take still images and turn them into animation:

Video Capture, Still Image Compliling Programs:

AVI Constructor

Stop Motion Pro

Frame Thief "Mac OS"

Animator DV

Dragon Stop Motion "Mac/PC"

IStopmotion "Mac OS"

Monkey Jam

Frame by Frame "Mac"

If you decide to create a computer system for your clay animation there are some more things you should keep in mind. For optimum performance your computer hard drive should be SCSI based, and the larger capacity the better. SCSI is recommended as a hard drive because it allows you to capture large data rates up to 6000 which means nicer images. Also the more memory the better when you are editing large amounts of video, and a way to back up your images on CD using a CD-RW drive would be the best thing to do since animation is a lot of work!

Photo by Tim Snyder of a motion blurred stop motion puppet. © HTS

Once you master your equipment and software, you may want to try out some ultra modern techniques that once were only possible by companies like ILM. At the height of stop motion, motion blur was experimented with by Phil Tippett and ILM as a way to advance the usually jittery-looking puppets with natural blur. Now it is possible with newer software products to digitally add blur at a fraction of the hassle.
Vision FX
seems to be the most affordable program that allows you to add motion blur costing about 100 dollars US. You can visit their site to see examples.

The Giganotosaurus image above is from 'Land of the Giants' Fernbank Museum/WSB TV. Animation was by Hall Train Studio and it was first aired in May 2001 in Atlanta. One other programs that will add blur but may be very expensive is the now obsolete Toonz from Soft Image.

Finally, before you go out and buy anything, check to see if you can get a better price at www.pricewatch.com
or
www.streetprices.com.
Also if you find a capture card but do not like the software, try to find software that meets your requirements bundled with hardware. For example
this bundle
which can be used with a lap top capture card includes literally over 1000 dollars worth of programs.

Free Video Editing and Graphics Programs:

The #1 free program to edit your .avi's is Windows Movie Maker

Free video editing program called Zwei-Stein here

Upload and edit your video online at Jumpcut

Free program to put all your .jpg's and .bmp's. into an animation here

To see the different video editing programs out there in which you can add sound and titles to your movies, click here .

Next you will need a capture card. There are a few ways that capture cards work. They can capture using Mpeg 1, or 2, or Motion .JPG. I don't know too much about the actual technical aspects behind the cards, but Motion .JPG gets you real nice results. I owned a Voodoo PCI TV capture card, and it captured in Mpeg 1. Now that I own a Pinnacle DC10 Plus "I no longer recommend this card since it's out-dated" that captures in Motion .JPG, I find the results are much nicer.

The major problem with Motion .JPG is that it does not work well with Adobe Premier, and for some that is a death sentence. Premier is a very popular editing program that cost over 500 dollars US. Also Adobe After Effects has a motion blur program that only works with Mpeg captured video just like Premier. Of course you could probably convert the video to allow Premier to work with it, but there may be some quality degradation in that process.

Check out Lio's "Stop Motion Works" Digital Stop Motion page here and Mike Brents "Dark Strider" Digital Stop Motion
page here
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