



CGT 353 Lecture 7

Animation in Flash

Introduction

- At its most basic, **animation** is very simple in Flash.
- Only control a few variables such as size, position, color, and shape.
- Additional elements such as layers, masks, and guides help, but these are still very simple components
- It is the infinite combinations and creative applications that allow the enormous number of ideas to present themselves
- When you use ActionScript to control and add interactivity to these movies, the number of possibilities increases even more
- Although most of you won't become **character animators**...we use examples of character animation in this discussion because it is the most complex category of animation.

Bit O' Flash Animation History

- First prominent use was by *Ren & Stimpy* creator **John Kricfalusi** in the creation of **The Goddamn George Liquor Program** in 1997
- 1999 – **WhirlGirl** - first regularly scheduled Flash animated web series on Showtime
- 1999 – **The VonGhouls**
- Dot-com era - **Icebox, MondoMedia, CampChaos, MediaTrip, Bogbeast and AtomFilms**
- **Adult Cartoons** - *Queer Duck, Gary the Rat, Happy Tree Friends, JibJab, Homestar Runner*



Flash Animated TV Series

- 2003 ***Chilly Beach*** - Launched on CBC Television, this became one of the first Flash productions to make the move from online "webisodes" to national TV.
- 2004 ***Foster's Home for Imaginary Friends*** Launched on Cartoon Network.
- 2004 ***Atomic Betty*** Launched on Cartoon Network in the US.
- 2005 ***The Buzz on Maggie*** Canceled Disney Channel series that ran for only one season. 2005 ***Disney's Little Einsteins*** Multimedia pre-school show, used Flash for all principal character animation in conjunction with video, photo collage, Maya 3-D animation and After Effects.
- 2006 ***Yin Yang Yo*** The Second Disney series made entirely in Flash.
- 2006 ***Metalocalypse*** Series on Adult Swim.
- 2006 ***Pucca*** A Flash series based on a series of online shorts produced by VOOZ in South Korea. The TV series is produced by Studio B in Canada.

Flash Animated TV Series

- 2006 ***Chaotic*** A Flash series based on the story of the original Chaotic Trading Card Game.
- 2006 ***Happy Tree Friends*** A very popular flash animated cartoon that started out as an internet cartoon around 1999 and it quickly became an internet phenomenon. In 2006, it became a full half-hour TV series on the channel G4.
- 2007 ***Total Drama Island*** Launched on Teletoon in Canada and on Cartoon Network in the US.
- 2008 ***Crime Time*** A popular flash cartoon by Future Thought Productions that is broadcast to television in Japan, Australia, Brazil, Russia, Turkey, Bulgaria, Malaysia, Indonesia, Brunei, Ukraine.
- 2008 ***Making Fiends***

Flash Feature Films

- 2005 ***The Golden Blaze*** Directed by Bryon E. Carson, starring the voices of Blair Underwood and Michael Clarke Duncan, had a limited theatrical run making it the first flash animated film to be released on the big screen.
- 2005 ***Xuxinha e Guto Contra os Monstros do Espaço*** Directed by Clewerson Saremba e André Passos, produced at Labocine, in Rio de Janeiro, released in 2005 Christmas, was a big success in Brazil.
- 2006 ***Romeo & Juliet: Sealed with a Kiss*** Former Disney animator Phil Nibbelink took 4 1/2 years to make it and he drew 112,000 frames with a Wacom tablet directly into Flash 4, in combination with Moho.
- 2006 ***That Darn Jesus*** An animated segment of nineteen minutes produced at an aspect ratio of 1.85:1 and HD 1080 (1920 px X 1080 px) for the movie Universal Remote by Future Thought Productions.

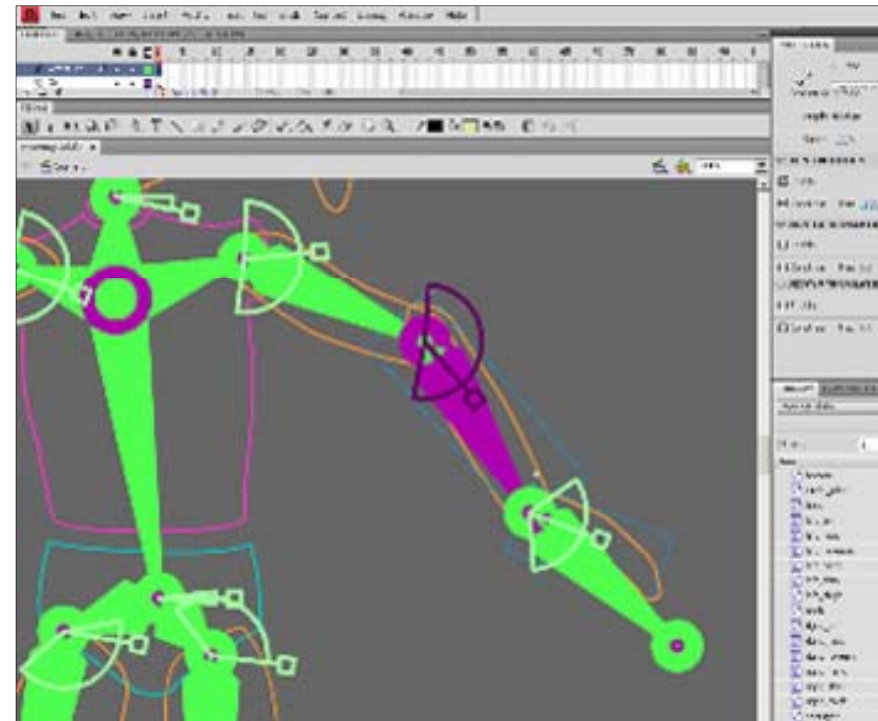
Flash Feature Films

- 2007 ***Turma da Mônica: Uma Aventura no Tempo*** Directed by Mauricio de Sousa, produced at Labocine, in Rio de Janeiro, is biggest box office in Brazilian animation history 2008 ***El sol*** First Argentinian animated movie done integrally with Adobe Flash. Directed by Ayar Blasco.
- 2007 ***Chilly Beach: The World is Hot Enough***" A spin off from the televised animated series Chilly Beach, as featured by <http://www.ilaugh.com> Produced by March Entertainment. 2008 ***Mickey the Squirrel*** Directed by Chaz Bottoms, a 76 minute feature animated on a Wacom Graphire Tablet with 6,500 frames. This film was screened at the 29th Cleveland International Film Festival.
- 2008 ***Sita Sings the Blues*** Directed and Produced by Nina Paley. An 83 minute feature film created independently and entirely in Flash 2008 ***Waltz with Bashir***

- **Source: Wikipedia**

Basic Flash Animation

- Frame-to-frame
- Motion tween
- Shape tween
- Creating these animations depends heavily on the use of the following aspects, which students should know soon:
 - Layers
 - Frames
 - Keyframes
 - Onion Skinning
 - Editing Multiple Frames
 - Masking Layers
 - Motion Editor
 - Inverse Kinematics
 - Bones and Binding Bones
 - Filters
 - Reversing Frames
 - Motion Guides
 - Shape Hints



Basic Things to Remember With Tweening

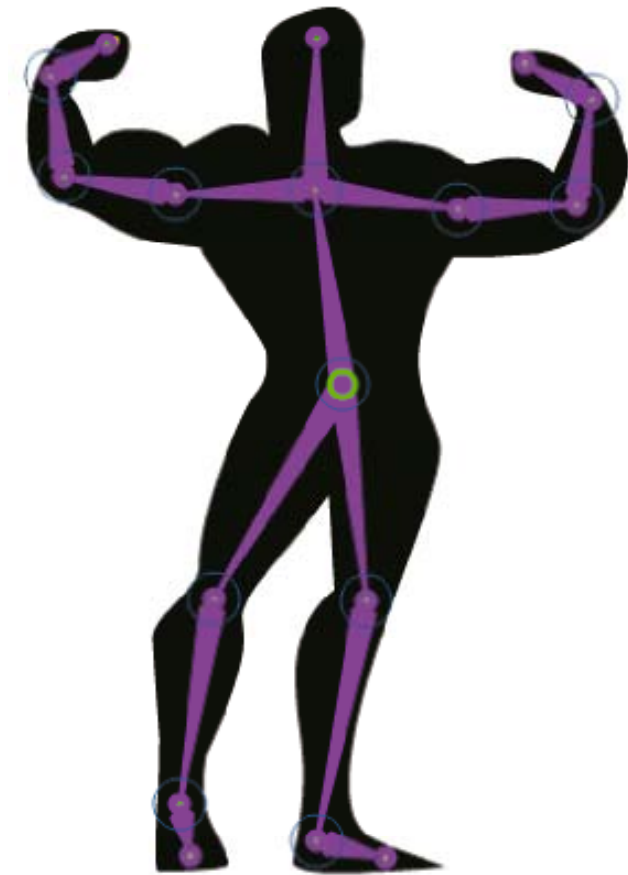
- Classic motion tweening only works on grouped items....
- Default motion tweening only works on symbols....
- Motion tweening has no effect on stage objects, but shape tweening does

Basic Things to Remember With Inverse Kinematics

- **Inverse kinematics (IK)** is a method for animating an object or set of objects in relation to each other using an articulated structure of *bones*.
- **Bones** allow symbol instances and shape objects to move in complex and naturalistic ways with a minimum of design effort.
- Chains of bones are called **armatures**.
- You can add bones to separate symbol instances or to the interior of a single shape

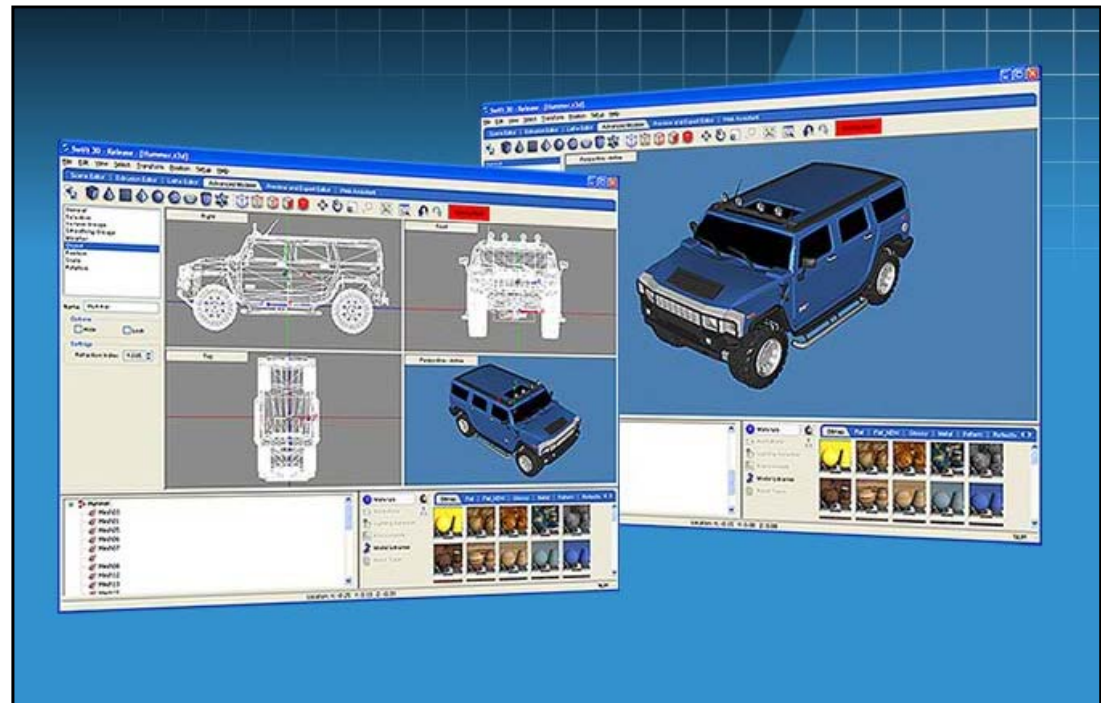
Basic Things to Remember With Inverse Kinematics

- Cannot edit the shapes/ images after bones have been attached.
- You can **constrain** the joints of the bones and limit their speed, motion, and rotation....
- When you add bones to symbol instances or shapes, Flash moves the instance or shape and the associated armature to a new layer in the Timeline.
- This new layer is called a **pose layer**. Each pose layer can contain only one armature and its associated instances or shape



Another Rule of Thumb

- ***Know how to make a wheel, but don't reinvent it***
- Look at complementary programs like **Swift 3D**

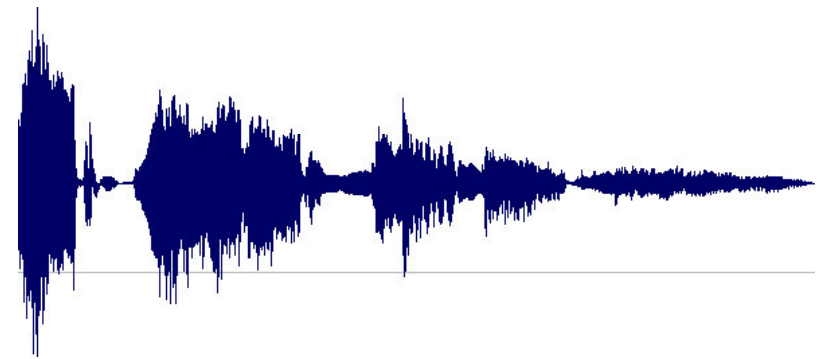


Introduction to 2D Animation Techniques

- Flash is a powerful tool capable of making broadcast-quality cartoons and animations
- Most basic principles of animation apply
- Unfortunately, there are not many Flash developers with traditional animation skills and vice versa

Working with Large File Sizes

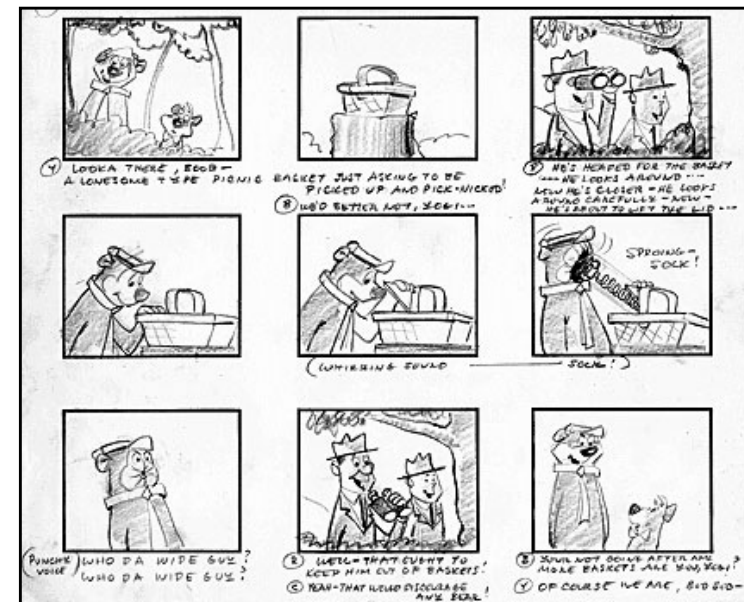
- Flash Web animations are small, but for broadcast output in Quicktime or .avi, the files are quite large...
- This means to create broadcast quality Flash animations you need the right gear



- Extensive use of **bitmaps and full-fidelity 16-bit 44 kHz stereo audio tracks** takes up a lot of space...
- Render time for such large files can take a while, and often make you think your computer has crashed

Storyboarding the Animation

- Although storyboarding is essential for any animation, for Flash it should be done a bit differently:
 - Break the story into workable cartoon scenes (not Flash scenes.)
 - Break each scene into camera shots.
 - Assign each scene to a separate Flash movie.
 - Assign each shot to a separate Flash scene.



What Takes the Most Work?

- Collecting your audio assets is the most difficult:
 - Music tracks
 - Sounds effects
 - Voice-overs
- There are a number of methods for obtaining sounds, but be aware of **copyright, patent, and royalty laws.**
- Your PC microphone may be sufficient for this class, but the sound quality is generally poor.
- We will be doing basic demos and exercises in lab with audio editing programs

Frame Rate Basics

- Movies are shot at **24 fps...**
- For video and 3D animation, usually runs at **30 fps...**
- Can get away with **12-15 fps** for Flash cartooning..but only in select circumstances.
- Primary reason using a low frame rate is to *get the animation done in your lifetime.*
- Many scenes where you can get away with **3 drawings per second**

Frame Rate Basics

- Rule of motion here is that **faster moving objects require fewer frames, while things that move slowly require more frames.**
- For this reason you hardly ever see slow motion sequences in broadcast cartoons.
- Remember that knowledge of Flash is no substitute for knowledge of motion



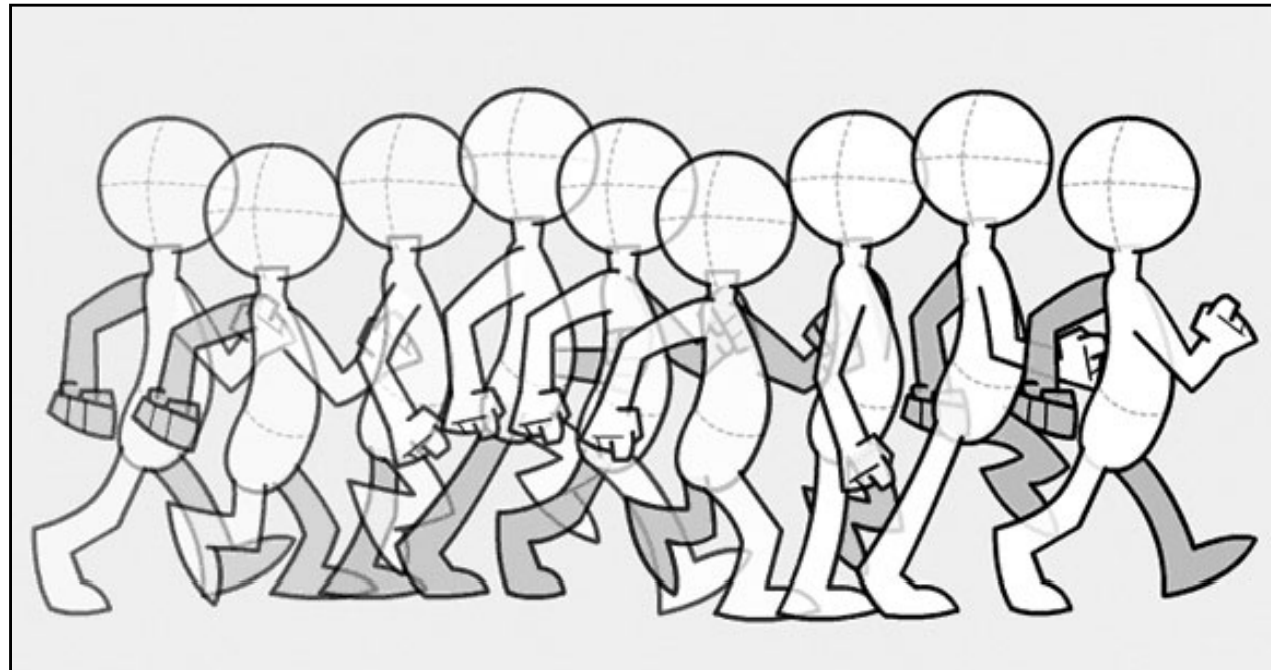
Concepts Critical to an Effective Animation

- **Motion and Emotion**
- **Anticipation** - actions characters take BEFORE they do something
- **Weight** - makes animation believable
- **Overlapping or Opposing Actions**
- **Motion Blurs**



Walk Cycles

- Vital to character animation
- Hard to animate because computers are too perfect whereas a walking creature is not
- Need to add variations (head bobs, jiggles, etc) in a walk to make it look effective



Walk Cycles

- Pre-built walk cycles in programs like Poser help this problem.
- If you need to slow down a walk, use **repeaters**, which are duplicated frames added for each existing walk keyframe.
- Flash **onion-skinning** helps you to create in-between shots if the animation isn't smooth.
- **Tip:** A timesaver to walk cycles is to isolate various components and animate them separately on separate layers. This prevents undesirable quivering movements in your animation.

Other Design Strategies - Limited Animation

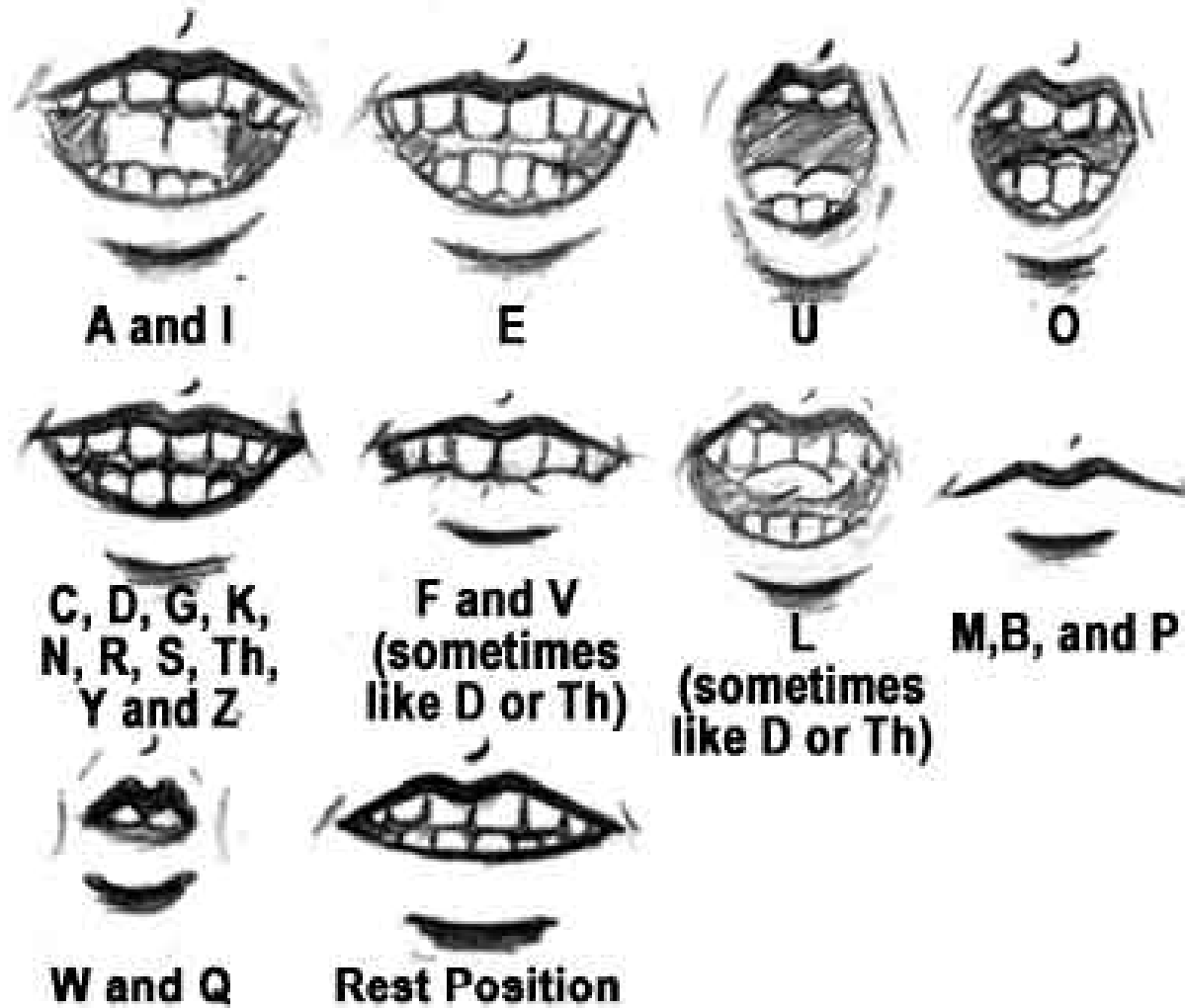
- **Limited animation** is the process of putting animated objects and non-animated objects on separate layers.
- Allows for maximum animation with minimal artwork.
- See Hanna Barbera cartoons



Lip-Syncing

- For effective lip syncing, you should draw **phonemes** for your characters
- **Phonemes (fo-neems)** are basic units of sound that make up spoken words
- Phonemes are melded together to create **morphemes**, which are distinct units of words, like syllables
- Most languages are only made up of **30 to 60 phonemes**
- For animation these can be reduced to about **10 basic mouth positions**

Phonemes



Lip-Syncing

- Make sure you use synced sound so that you can match up the sound to the particular phoneme
- Don't try to shape morph the phonemes as its usually not worth the effort
- Talking profiles are more difficult to draw than head-on "talks" so keep them to a minimum

Backgrounds and Scenery

- Try to keep as few as possible in your cartoon
- To simulate motion, pans, zooms, and other camera effects, you will have to change the background
- Can layer background or scene elements to give a 3D appearance
- Remember that objects in the distance move slower than objects in the foreground
- Distant objects are also more blurred and washed-out



Introduction to 3D

- 3D is one of the future roads the Web will take
- Unfortunately, one of Flash's biggest weaknesses is its ability to handle 3D
- While Flash has no true 3D tools, it is possible to simulate 3D in Flash
- Can either “rig” 3D in Flash using visual illusions, utilize 3D graphics software, or use ActionScript
- Flash CS4 offers a bit better 3D support with its new 3D transformation tool...but still not true 3D

A Little on Programs Like Director

- The biggest disadvantage of Flash 3D is that while other 3D plug-ins like VRML and Shockwave use a 3D engine to display and allow manipulation of the objects/mesh in real-time, Flash does not.
- 3D features in Director:
 - **Dynamic Animation and Creation of Geometry at Runtime** - control position, rotation, and scale for models, lights, groups, cameras, textures, and individual bones with scripting.
 - **Particle Systems Effects** - smoke, fire, water, rain, etc
 - **Multi-Resolution Mesh (MRM)** - control the number of polygons used to display an object depending on the amount loaded, the distance from the camera, the frame rate, or other conditions.
 - **Subdivision Surfaces (SDS)**- stream in simple polygonal shapes that can be increased in resolution at the client-side to add complexity.
- **Physics** - add real-time interactive physics effects for realistic motion and interactions

Basic Methods for 3D/ Flash Integration

- **"From Scratch" Construction** (most difficult)
- **Direct Bitmap Raster Integration** - importing raster frames from a 3D program or GIF animation (least usable method)
- **Manually Tracing Bitmaps** - exporting raster frames from a 3D program then tracing the geometry (second most difficult)

Basic Methods for 3D/ Flash Integration

- **Automatic Tracing** - either in Flash or another program like Freehand (files far too big)
- Adobe Streamline a good choice for this method
- **3D Environment /Static Extraction** - using a program like Freehand to take vector wireframes or simple primitives and clean them up
- **3D Environment /Dynamic Extraction** - third party plugin (easiest)
- **Other** - LiveArt, Dimensions, etc

File Formats

- Higher end programs like 3D Studio Max, Maya, and Lightwave will provide more sophisticated and professional animations
- Several programs exist that will export directly to the swf format, including Swift3D, Vecta 3D, and Plasma
- The latter programs are not as sophisticated but are easier to learn and are built with Flash in mind
- Several 3rd party plugins will allow you to generate swfs from higher-end programs like Max
- If no swf support, use either PICT (Mac) or the PNG (PC) format to import individual frames of a raster animation
- Use Encapsulated Postscript (EPS) or AI (Adobe Illustrator) for vector formats
- Try to use vector formats whenever possible

Advantages of Using Supplementary 3D Programs

- Easier animation
- Quicker turnaround
- Higher level of precision and control
- Streamlining of process

To Simulate 3D in Flash

- Use perspective drawings in your design
- Use layers to simulate depth
- Use a sequence of frames that have been rendered in a 3D program