

2D Drawing and Animation Techniques



Guilford County SciVis
V106.04

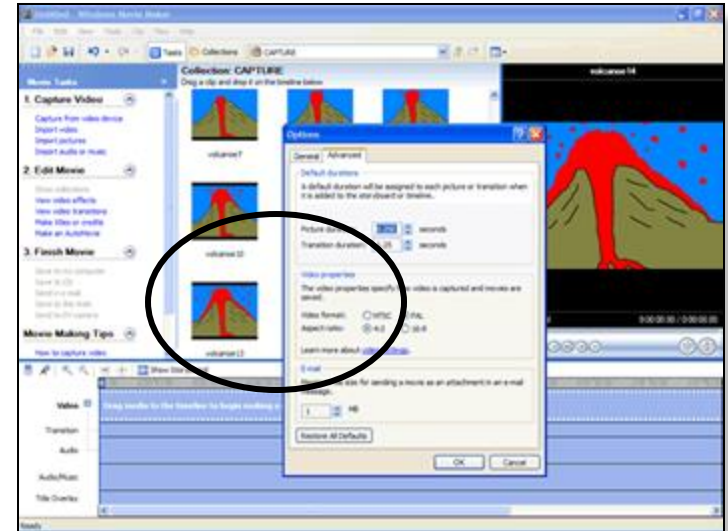
Early Animation Processes

- ❓ **Animation** is created when still images are played in rapid succession so that they appear to produce images that are constantly moving.
- ❓ Animation appears to have **continuous** motion because the human eye (brain) "holds-onto" the still image for just a brief moment after it is viewed, and the image is still "there" (in your brain) when the **next image** is viewed.
- ❓ The **timing** between individual images must be fast enough for the sequence to appear smooth.



Early Animation Processes

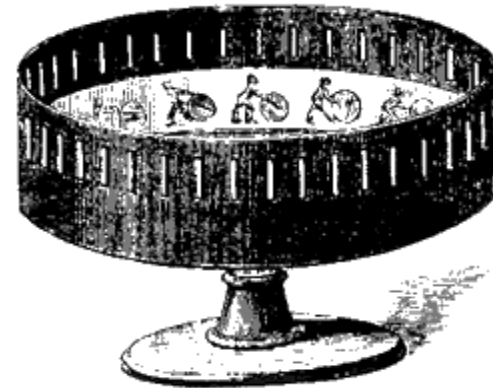
- ❓ The National Television Standards Committee (**NTSC**) frame rate = 30 frames per second for television (North America and Japan).
- ❓ PAL (Phase Alternate Line) is the European standard of 25 frames per second.
- ❓ The standard rate for film (motion pictures) = **24** frames per second.
- ❓ A frame rate of 30 fps will require **1800** images for one minute of animation (30 fps x 60s).



Early Animation Processes

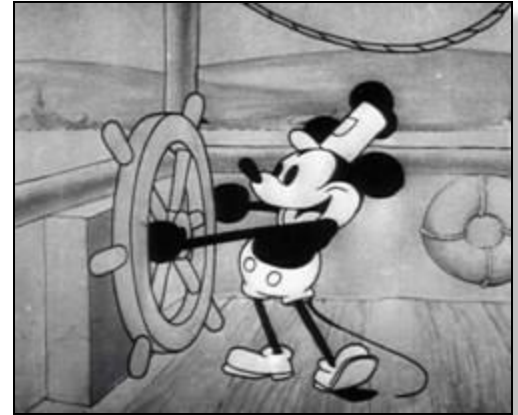


The *Zoetrope* was a device that was used to produce animation in the 1800s. It consisted of a circular frame holding individual, sequenced images, and a fixed viewpoint through which the spinning pictures were viewed. The term "*movies*" comes from the moving images.



Early Animation Processes

- ❑ The **Walt Disney Studios** developed animation into a modern art during the 1930s and 1940s.
- ❑ The different "**layers**" of the animated scene were painted onto transparent sheets, called ***cels***.
- ❑ A hierarchy of artists was developed for drawing and painting the sequences of images.



Early Animation Processes

- ❓ A master artist would draw the most important or **key frames** ("keyframes"), and less-skilled or less-experienced artists would fill in the action for the in-between ("**tweens**") frames. Other artists would paint or fill the outlines with color.
- ❓ **Stop-action animation** uses clay or other models whose positions are sequentially altered and photographed for each frame.



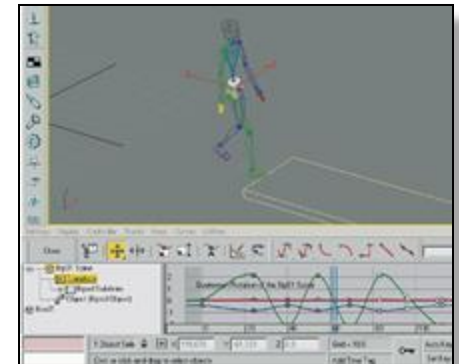
Computer Animation

- ? Unlike early animation, where every frame must be created to produce movement, in computer animation you define **points** in time (known as *keyframes*) and the computer draws all of the **in-between frames**.



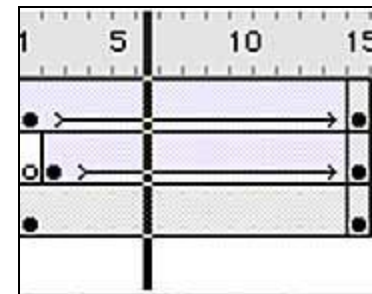
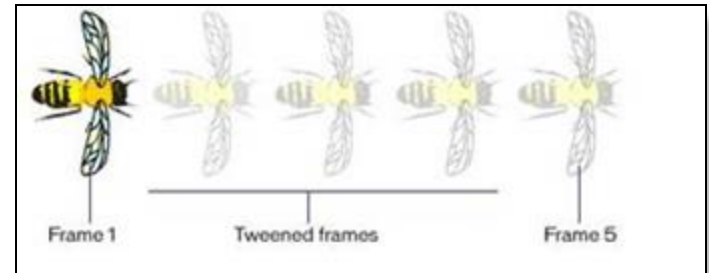
Computer Animation

- ? Position the object to be **animated** where you want the action to begin; this is first **keyframe**.
- ? Set the number of frames that you want to use for the **animation** sequence. A one second "movie" would typically use 30 frames per second (**30 fps** NTSC); two seconds would use 60 frames, etc.
- ? Move, scale, or deform the object to become the next **keyframe**.



Computer Animation

- ❓ Instruct the computer to **calculate** all of the transformations that will occur between the first keyframe and the last.
- ❓ The computer will produce the 28 additional "**in-between**" images (*tweens*) needed for the one second of animation (you created the other two frames, the keyframes, for a total of 30).



Storyboarding

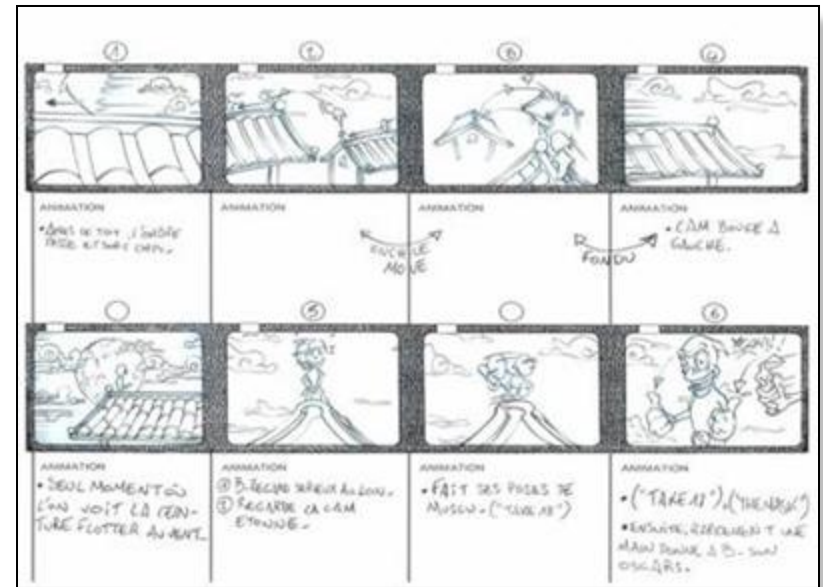
- ❓ A **storyboard** is a graphic, sequential depiction of an animation that is going to be created. It is a **visual** script designed to make it easier to see the animation scenes before they are created.
- ❓ A storyboard identifies the **major events** in the story and illustrates them in cells (small squares or rectangles), which are drawn out in a sequential pattern.

Example Storyboard



Storyboarding

- ❑ Storyboards are used for **movies**, TV, commercials, and animation.
- ❑ The **artwork** does not have to be pretty or complex, but it should be neat and comprehensible.
- ❑ The pictures in the storyboard should be accompanied by **text**.



The End

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"..yeah I SAW it.... not too bad..."