

FUNDAMENTAL OF MULTIMEDIA

MULTIMEDIA ELEMENTS : ANIMATIONS

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Chapter Description



- **Expected Outcomes**

At the end of this lesson you will understand:

- Understand the characteristics and format of animation
- Type of animation
- The usage of animation

- **References**

- Tay Vaughan. Multimedia: Making It Work, Ninth Edition. Mc Graw Hill. 2014. ISBN-13: 978-0071832885.
- Zhe-Nian Li, Mark S. Drew.S & Jiangchuan Liu. Fundamentals of Multimedia (Texts in Computer Science) 2nd ed. 2014 Edition. Springer Publication. 2014. ISBN-13: 978-3319052892.
- Khalid Sayood. Introduction to Data Compression, Fourth Edition (The Morgan Kaufmann Series in Multimedia Information and Systems) 4th Edition. Elsevier. 2012 ISBN-13: 978-0124157965.
- Savage, T.M., Vogel, K.E. An Introduction to Digital Multimedia 2nd ed.. 2013. Jones & Bartlett Learning ASIN: B00LZM6ESY.
- Parag Havaldar, Gerard Medioni. Multimedia Systems: Algorithms, Standards, and Industry Practices (Advanced Topics) 1st Edition. Cengage Learning. 2011. ISBN-13: 978-1418835941



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What is Animation?

50 years ago Walt Disney created animated objects such as Mickey Mouse.

Today the process used to create animated objects has had to change with the use of computer

In fact, it continues to change becomes more advanced and easy to use.



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Animation

The word “animation” is a form of “animate,” which means to bring to life.

Thus when a multimedia developer wants to bring an image to life, animation is used.

What do you think? A spinning globe is it better to film the motion on video, or is animation a better solution?



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The Power of Motion

Visual effects such as wipes, fades, zooms, and dissolves are available in most authoring packages.

But animation is more than wipes, fades, zooms, and dissolves.

Until Quick Time and AVI motion video became more common place animations were the primary source of dynamic action in multimedia.



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Animation

**Adds visual impact
to your multimedia
projects and Web
pages**

**Many multimedia
applications provide
animation tools,**



<http://www.freedigitalphotos.net/images/search.php?search=animations>



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Animation

First you should understand the principles of how the eye interprets the changes it sees as motion.



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Principles of Animation

Animation is possible because of a biological phenomenon known as *persistence of vision*

The psychological phenomenon called *phi* .

An object seen by the human eye remains chemically mapped on the eye's retina for a brief time after viewing.



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Combined with the human mind's need to conceptually complete a perceived action.

This makes it possible for a series of images that are changed very slightly and very rapidly, one after the other, seem like continuous motion .



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Animation

Animation adds visual impact.

Persistence of vision allows a series of separate images to blend together into a visual illusion of movement.



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Can be used to:

- Illustrate a process or movement
- Provide Humor
- Help make a point to get attention



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Kinematics

Kinematics is the study of the movement and motion of structures that have joints, such as a walking man.

Software: Fractal Design's Poser



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Animation and Frame Rates

TV video builds 30 entire frames or pictures every second.

Movies are shot at a shutter rate of 24 frames per second, but using projections tricks the flicker is increased to 48.

On some projectors each frame is shown 3 times before the next frame, for a total of 72 flickers per second which helps eliminate the flicker effect.

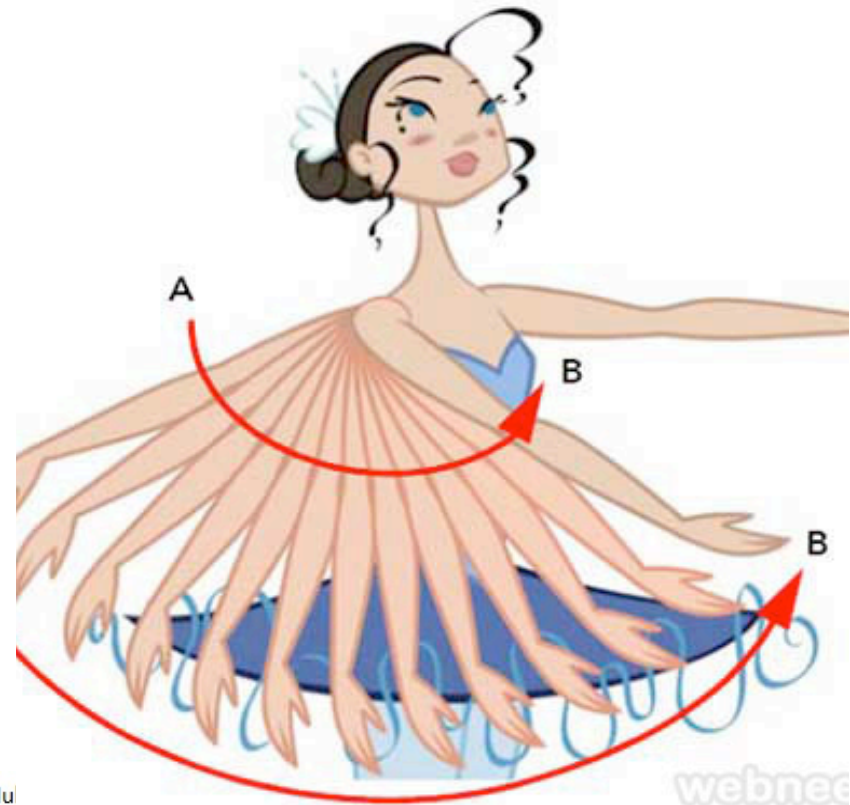
Cel Animation – plays at 24 frames per second.



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- Frame per second
- The movement shows the dancing

Source:www.webneel.com



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Animation Techniques

Computers have taken a great deal of handwork out of the animation and rendering process.

And commercial films such as *Jurassic Park*, *Beauty and the Beast*, *Toy Story*, and *Shrek* have utilized the power of the computers.



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Computer Animation

Typically employs the same logic and procedural concepts as cel animation

You can usually set your own frame rate

At 15 frames a second the animation may appear jerky and slow

2-D animation can be an acceptable alternative to the expense of creating video



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2-D Animation

Two types:

Cel animation

Path animation



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Cel Animation

Made famous by Disney

24 frames per second therefore a minute may require as many as 1,440 separate frames.

Cel animation: is based on changes that occur from one frame to the next.



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Cel stands for celluloid which is a clear sheet with images drawn on them.

The celluloid images are placed on a background that is usually stationary.

The background remains fixed as the images change.



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Example



Source: www animatorizor.wordpress.com



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Path Animation

Moves an object along a predetermined path on the screen
The path can be a straight line or have a number of curves.

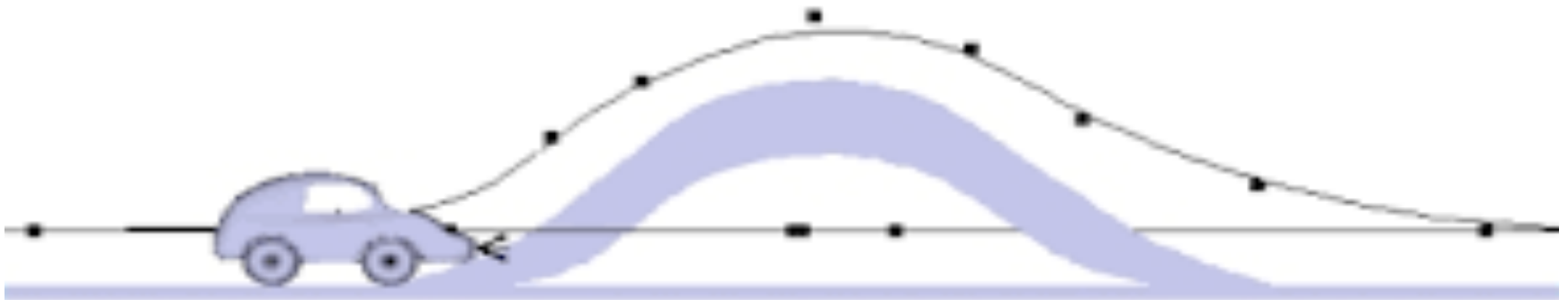
Starts with *keyframes* (the first and last frame of an action).
The series of frames in between the *keyframes* are drawn
in a process called *tweening*.

Tweening requires calculating the number of frames
between *keyframes* and the path the action takes, and
then actually takes, and then sketches a series of
progressively different outlines.



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example

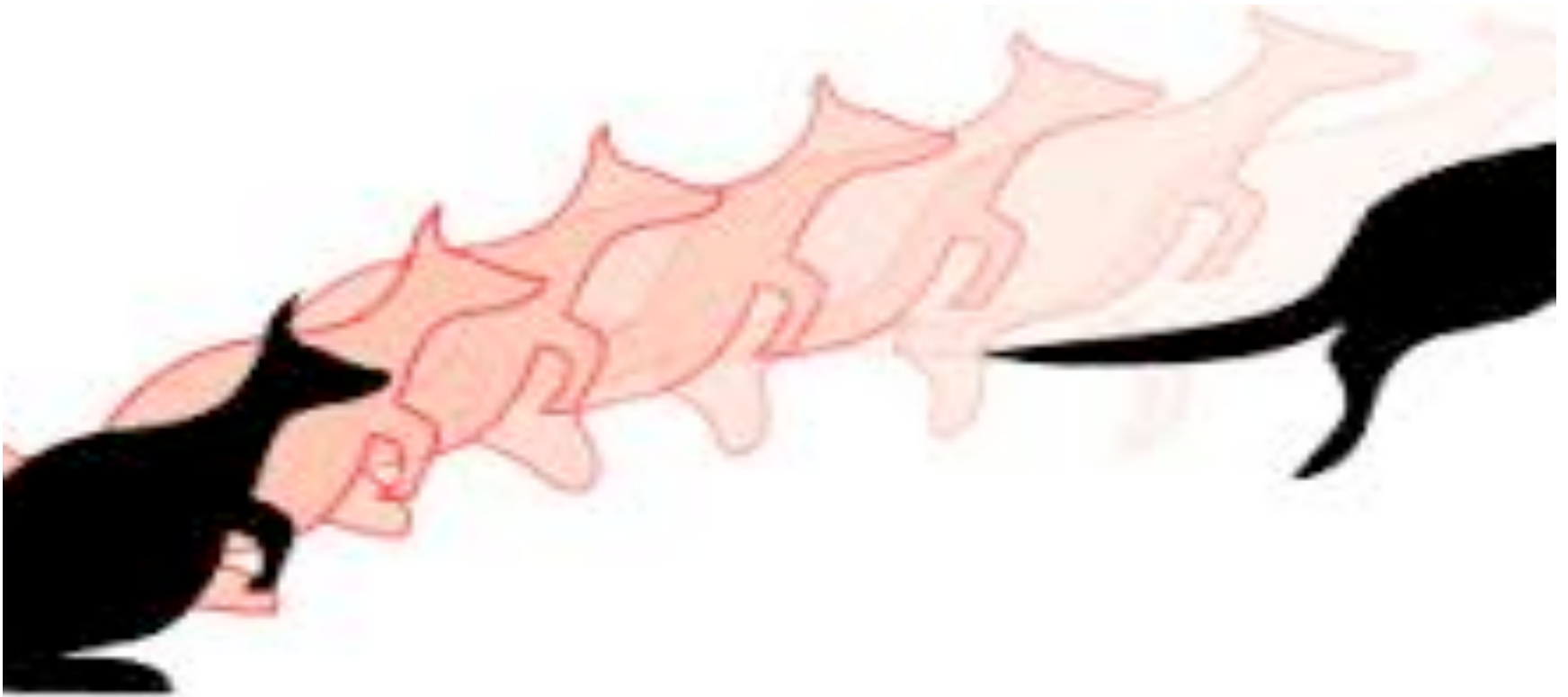


Source: www.artofillusion.org



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tweening



Source: austincc.edu



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3-D Animation

3-D Animation involves three steps: modeling, animation, and rendering

Modeling – the process of creating objects and scenes

Animation – the process of defining the object's motion

Rendering – the final step in creating 3-D animation.

Morphing is the process of blending two images into a series of images

Warping allows you to distort a single image

Virtual reality (VR) creates an environment that surrounds the user so that they become part of the experience.



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Source: www.play.goggle.com



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Morphing

Where one image transforms into another
Software: Avid's Elastic Reality, Black
Belt's WinImages, Gryphon Software's
Morph, Human Software's Squizz,
MorphWizard, Unlead's MorhStudio



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Morphing



Source: www.play.google.com



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Animation File Formats

Software

Director

Animator Pro

Studio Max

SuperCard and Director

Windows Audio Video Interleaved

Macintosh

Motion Video

CompuServe

Flash

Shockwave

File Format

.dir & .dcr

.fli

.max

.pics

.avi

.qt & .mov

.mpeg

.gif

.swf

.dcr



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