Multimedia

chapter (3)

Animation

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Introduction to Animation

- **Animation** is the rapid display of a sequence of images of 2-D or 3-D artwork or model positions in order to create an illusion of movement.

Animation is the creation of moving pictures one frame at a time.

- Ex1
- EX2

Introduction to Animation

- Traditional animation was time consuming and labour intensive
- Computers animation is time consuming and labour intensive, but it produces more sophisticated results
- Interactivity can also be incorporated into computer animations

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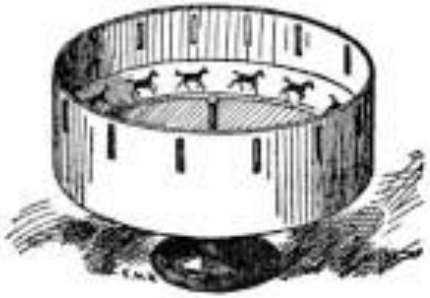
1. Traditional animation
2. Stop motion (frame-by-frame)
    - clay animation
    - cel animation
3. Computer animation
    - 2D animation
    - 2.3.2 3D animation

Introduction to Animation

- One traditional method of animation was produced by creating a series of drawings that progressively change



THE ZOOTROPE.

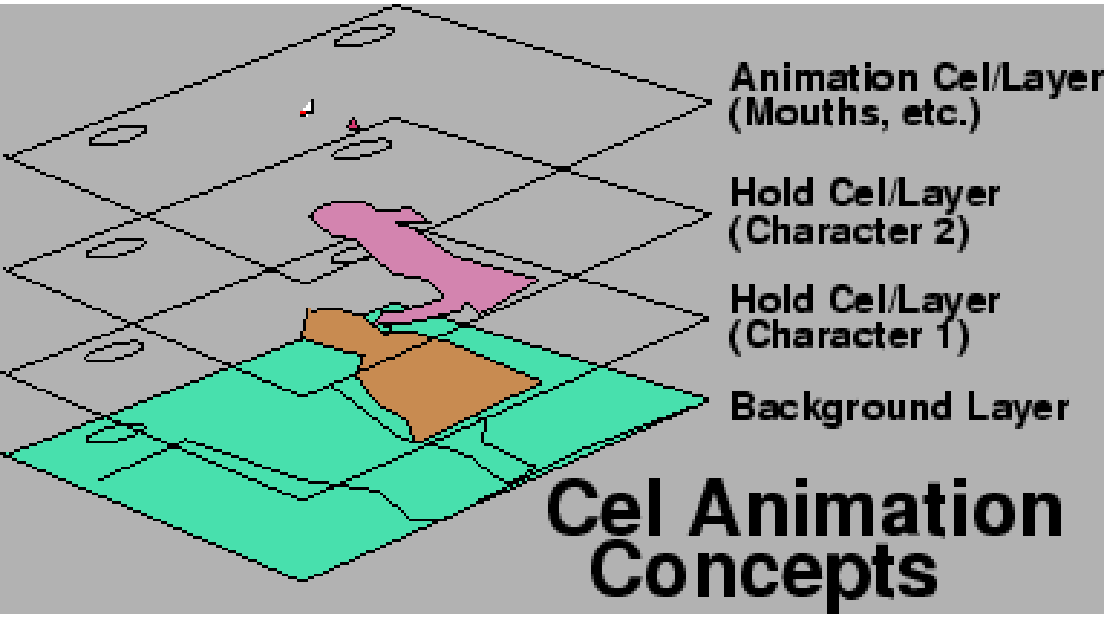
PHENAKISTOSCOPE WITH A CYCLE OF DRAWINGS TO SHOW A DOG IN MOVEMENT.

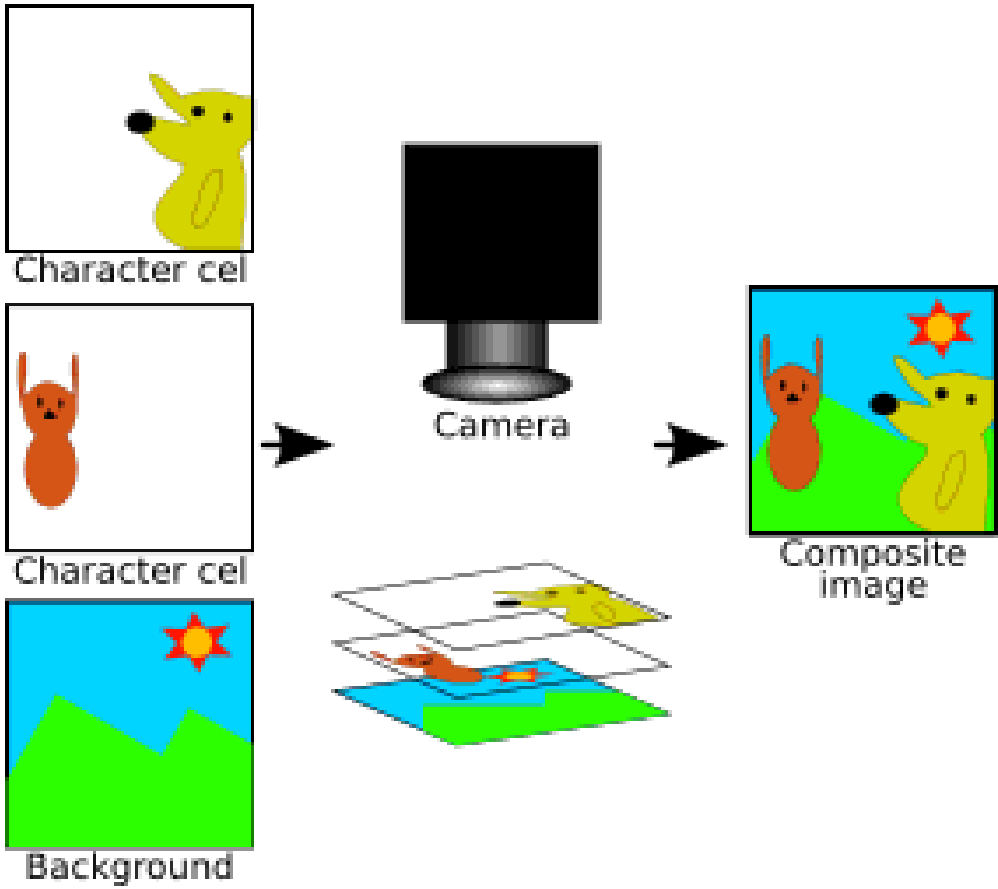
Frame-by-Frame Animation

- One traditional method of animation was produced by creating a series of drawings that progressively change

Cel Animation

- Another form of animation was to use transparent sheets
- The sheets were then layered one over the other to build the complete picture
- Using sheets saved redrawing the entire image every time (avoid unnecessary redrawing)
- The transparent sheet are known as cells from the word cellulose


Animation Cel/Layer
(Mouths, etc.)
Hold Cel/Layer
(Character 2)
Hold Cel/Layer
(Character 1)
Background Layer
Cel Animation
Concepts

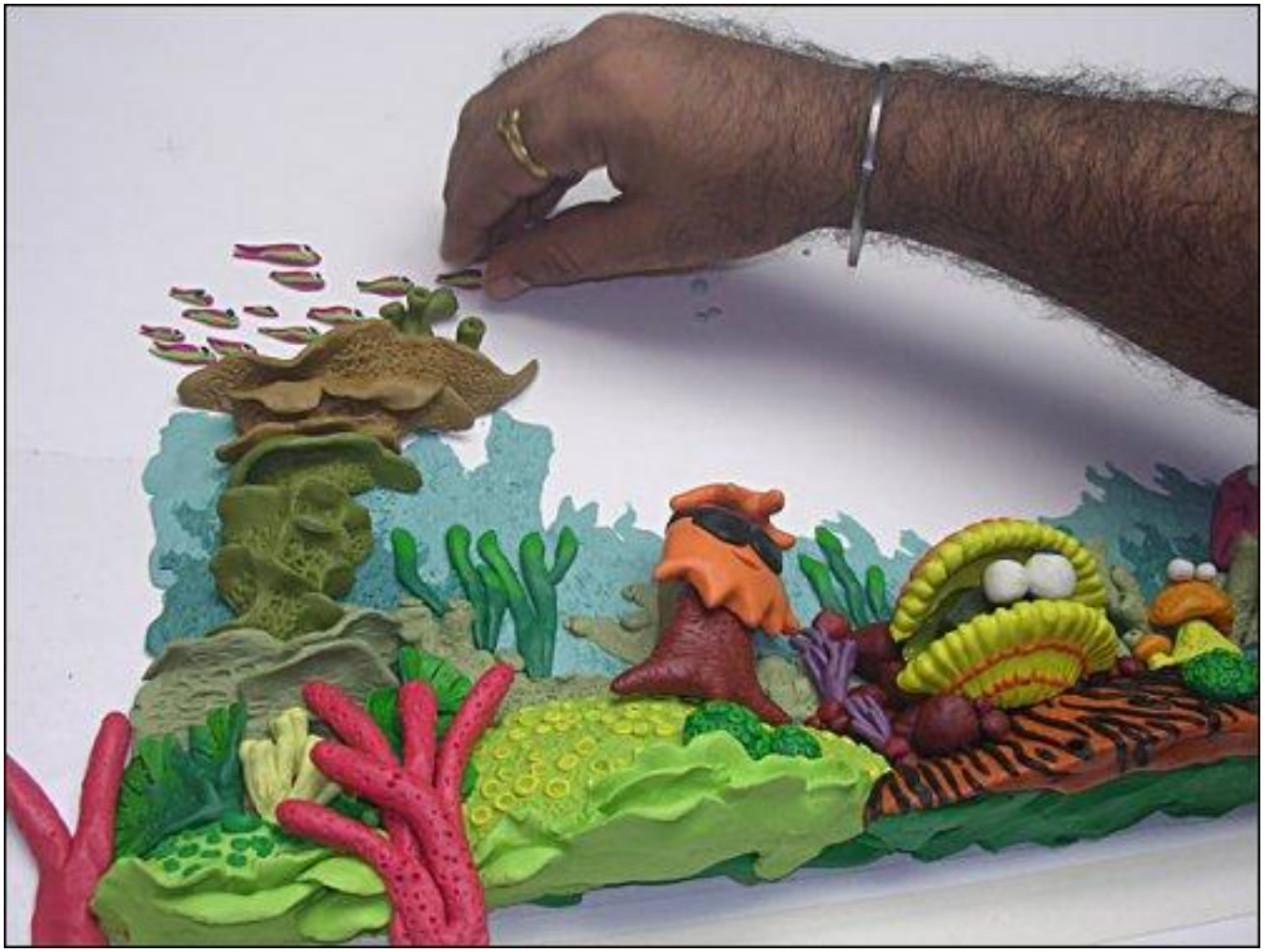

Character cel
Character cel
Background
Camera
Composite
image

Clay model animation

- Clay model animation
- This is where the objects are created in clay (or sand, paper, etc.)
- They are then changed slightly for every frame

  (For film this is 24 frames per second)

Clay model animation



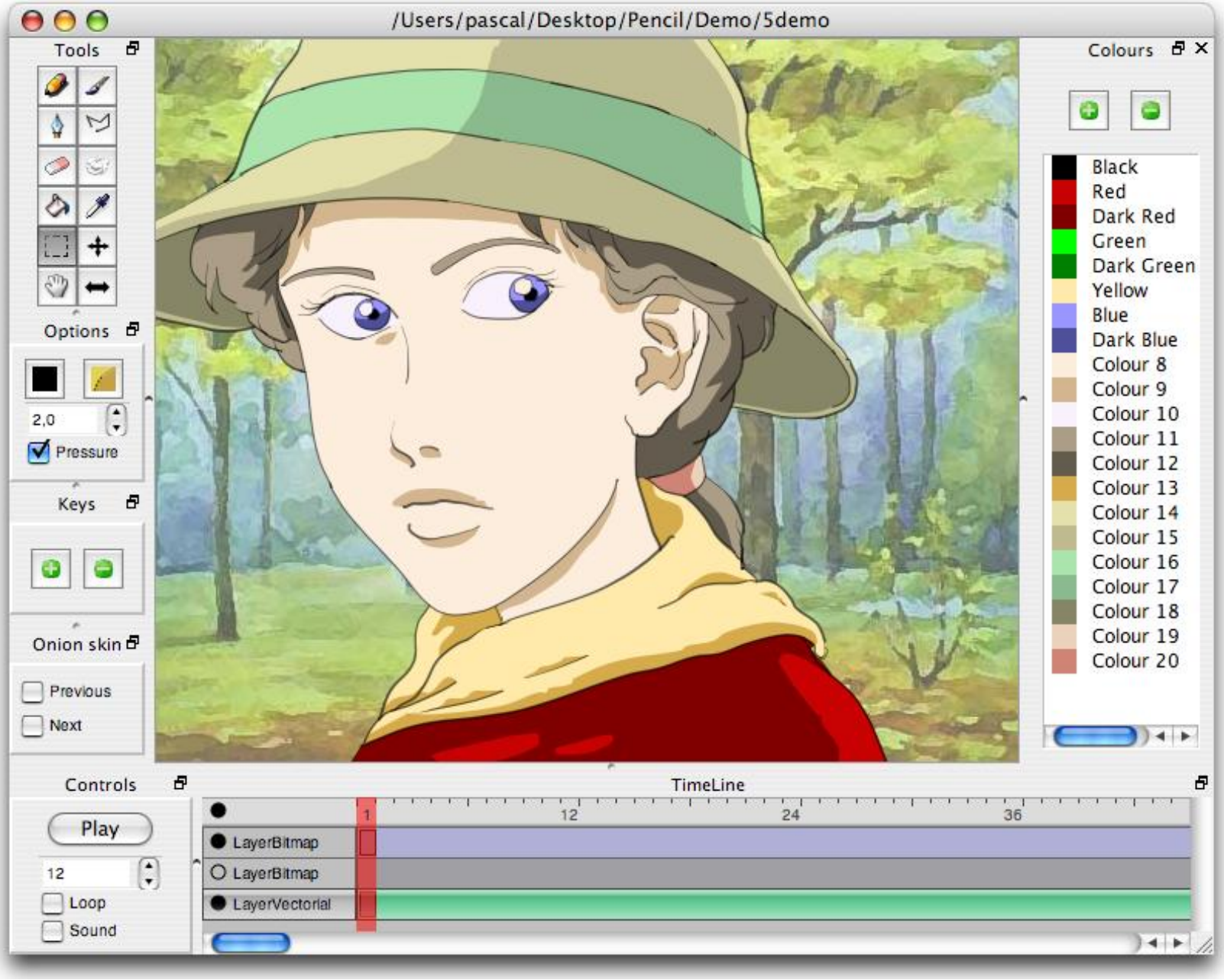
Clay model animation

Clay model animation

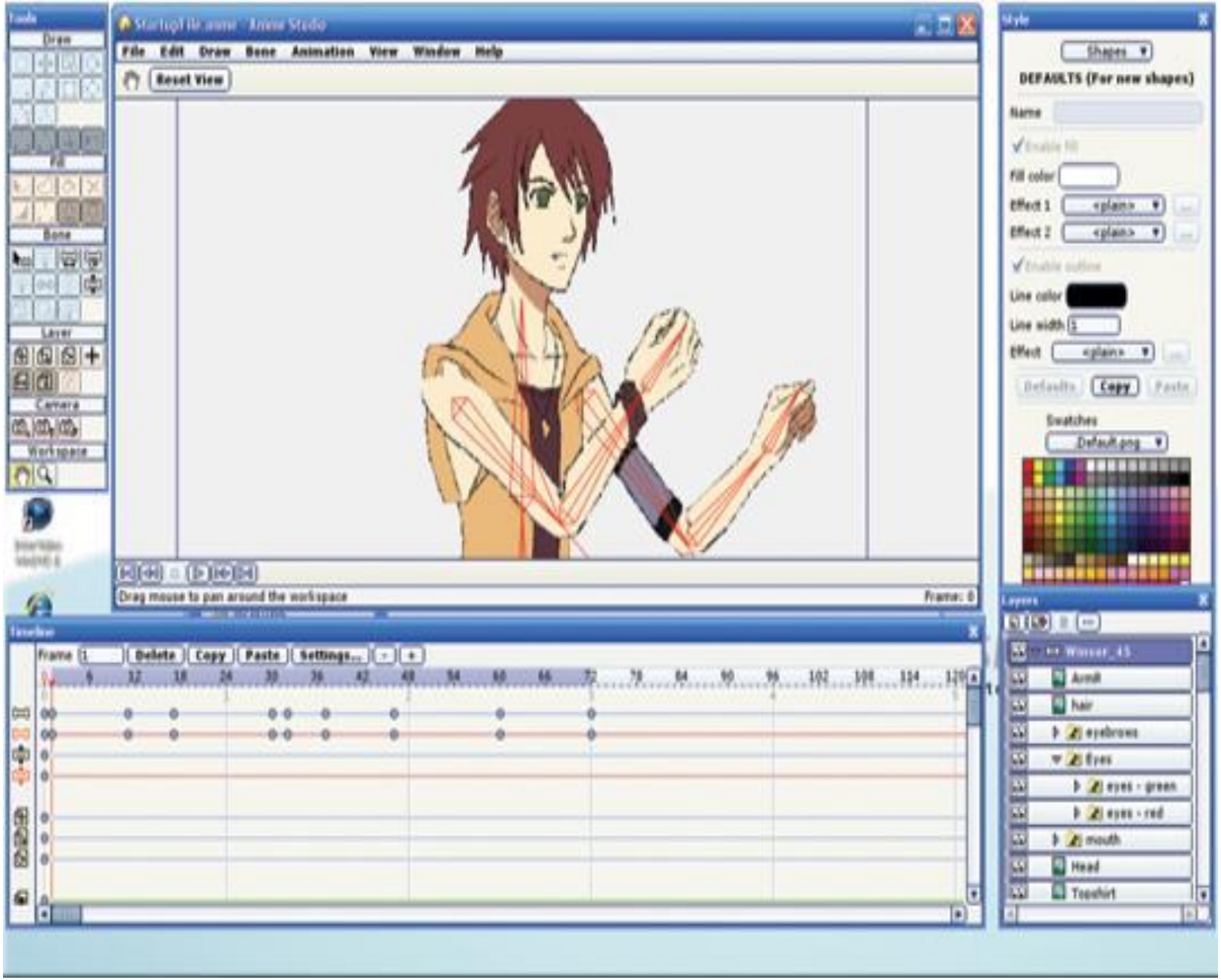
Computer Animation

- Computer animation uses some of the systems from traditional animation
- There are three main types of 2D computer animation
  - Cast Swapping
  - Tweening
  - Scripted

2D computer animation



2D computer animation



Cast Swapping

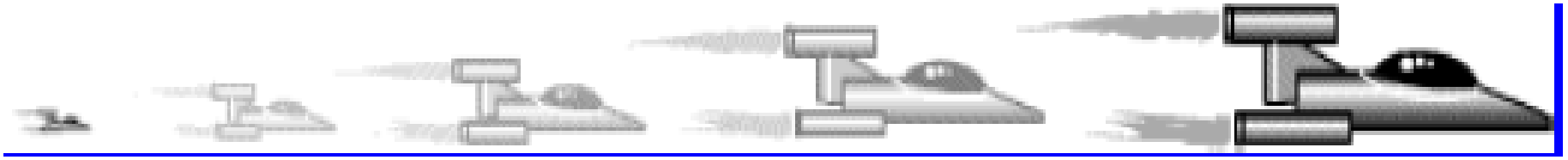
One cast member is animated by:

- Slightly changing it
- Swapping it with another cast member

Tweening (Keyframing)

- A cast member is moved across the screen over a period of time
- The start and end frames are keyframes
- Any change in direction or pace is a keyframe
- The computer then generates the image in between
- This is known as tweening

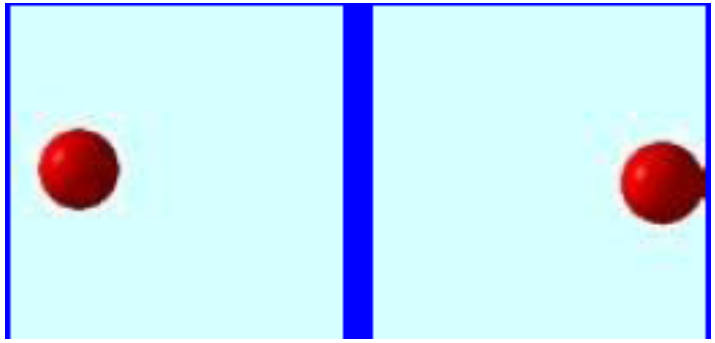
Tweening (Keyframing)



Start End

- Location
- Color
- Size
- Linear or more complex equations

How should these frames be tweened?



Start End

Scripted

- The animation is created by using a script or program
- Examples of scripted animations are
  - Changing co-ordinates of objects to move them
  - Changing Colours of objects
  - Changing position and size of objects

Making animation believable

- Action in animation involves
  - Preparation
  - Action
  - Recovery

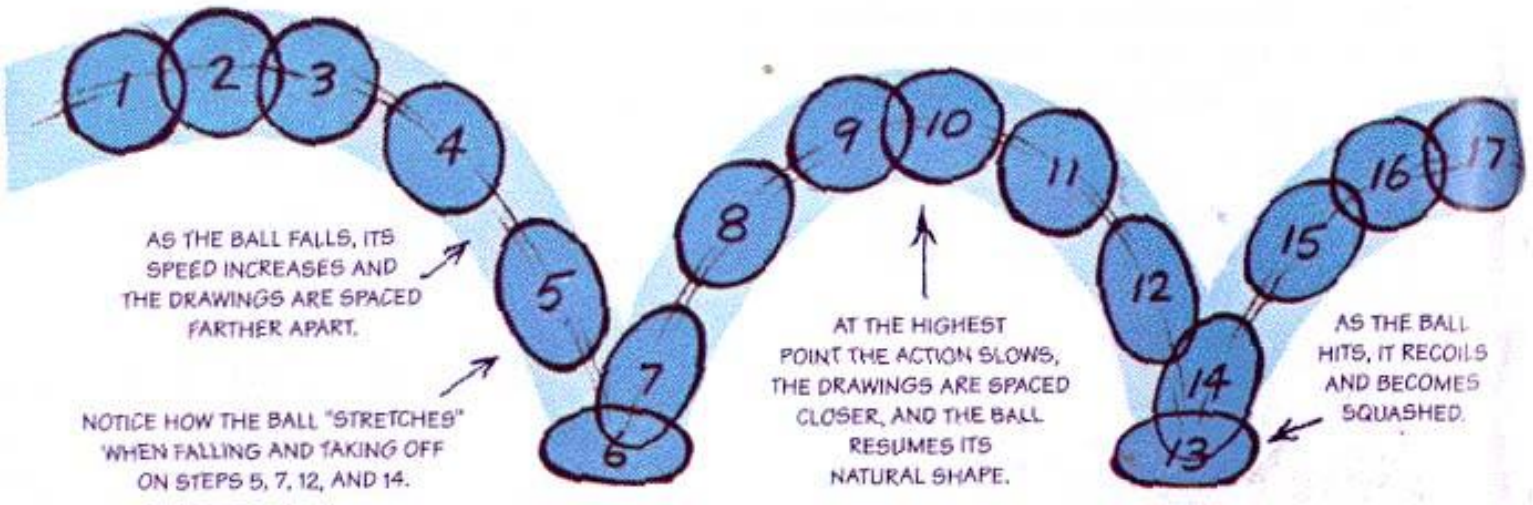
Making animation believable

A person jumping does not just stand and jump, they do the following:

- Preparation - The person bends and swings their arm back
- Action - Jumps
- Recovery - Stands to regain balance

Making animation believable

- A ball
  - Falls
  - Bounces
  - Recovers
- As the ball touches the ground the ball does not remain a circle it will squash with force


1
2
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14
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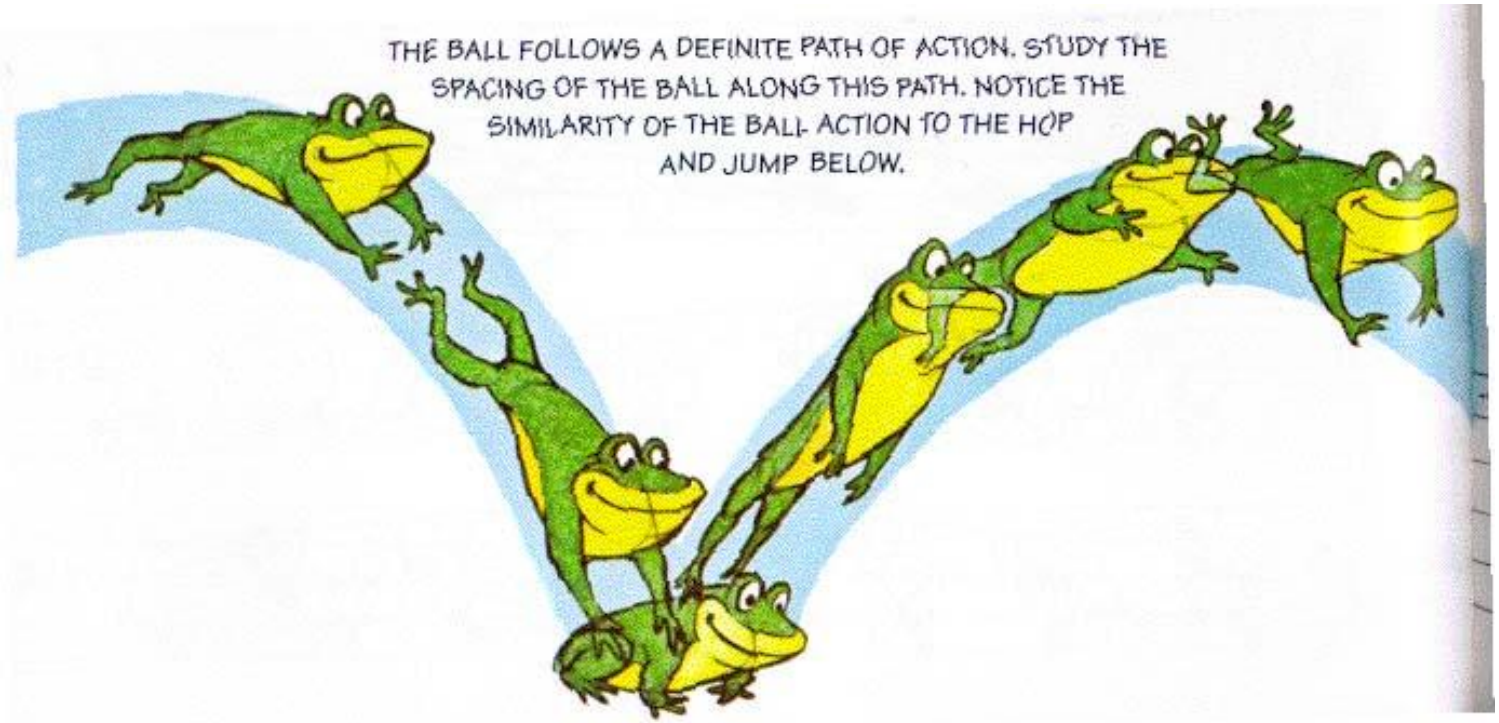
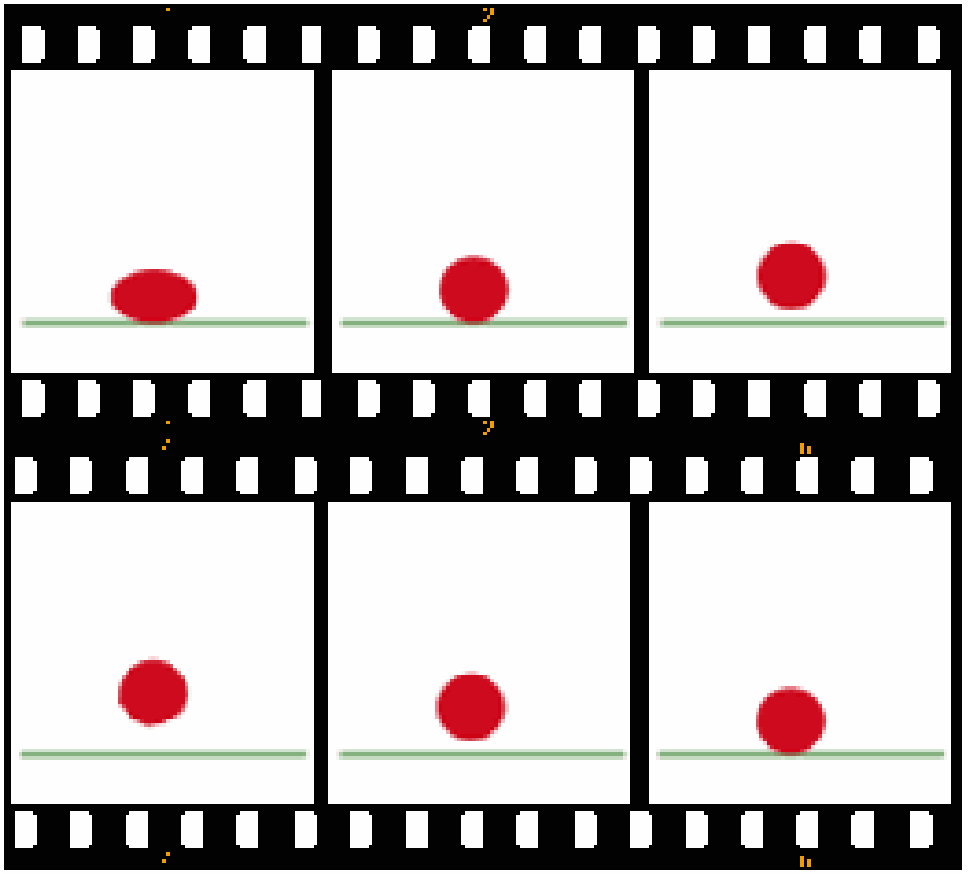
16
17
AS THE BALL FALLS, ITS SPEED INCREASES AND THE DRAWINGS ARE SPACED FARTHER APART.
NOTICE HOW THE BALL "STRETCHES" WHEN FALLING AND TAKING OFF ON STEPS 5, 7, 12, AND 14.
AT THE HIGHEST POINT THE ACTION SLOWS, THE DRAWINGS ARE SPACED CLOSER, AND THE BALL RESUMES ITS NATURAL SHAPE.
AS THE BALL HITS, IT RECOILS AND BECOMES SQUASHED.


THE BALL FOLLOWS A DEFINITE PATH OF ACTION. STUDY THE SPACING OF THE BALL ALONG THIS PATH. NOTICE THE SIMILARITY OF THE BALL ACTION TO THE HOP AND JUMP BELOW.



Making animation believable

- The ball makes a noise as it hits the ground
- The person definitely makes a noise as they jumps
- So animations should include sounds

- To Make the animation believable it should include sounds

Making animation believable

- Sound is essential to making animations believable
- People will fill in information if they are provided with the correct sound effect (car horn or type squeal off screen)

Lip Synchronisation

- It is important to synchronise sound and facial expressions
- The first and last words are most important
- The shorter the phrase the more accurate the synchronisation
- There are various mouth positions for different sounds

Lip Synchronisation

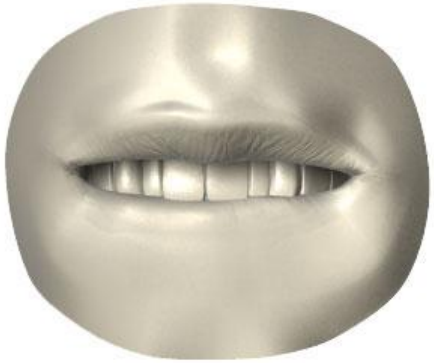
- Use at least two mouth shapes, open and closed
  - a_i

  - c_d_g_k_n_r_s_th_y_z

Lip Synchronisation

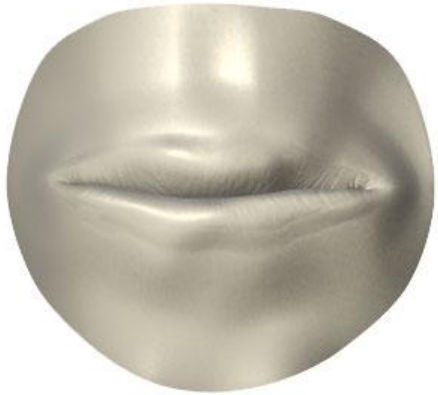
- e

- f_v_d_th



- l_d_th

- m_b_p

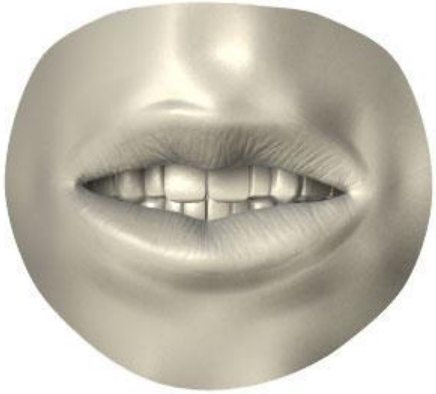


- o

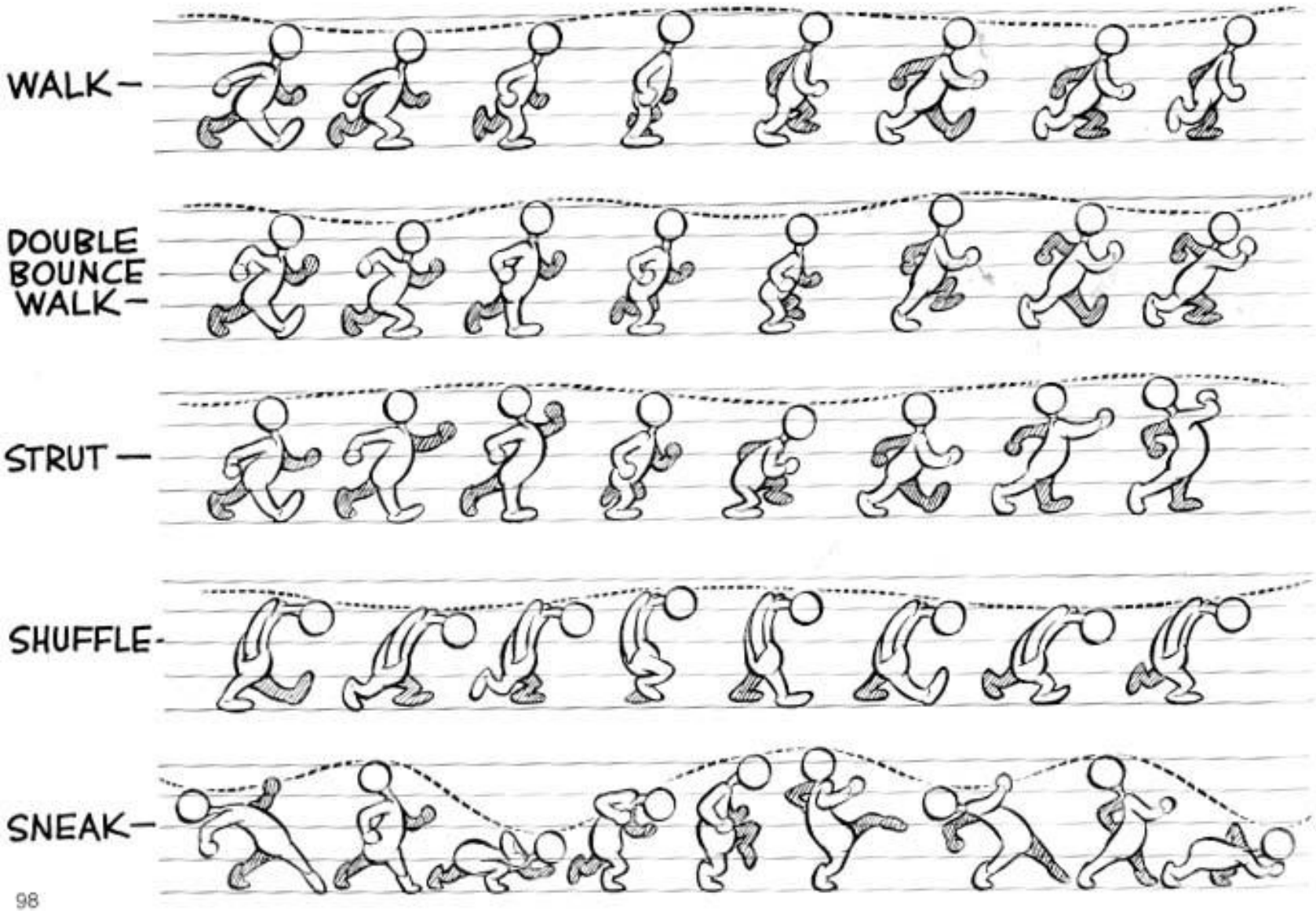
- u

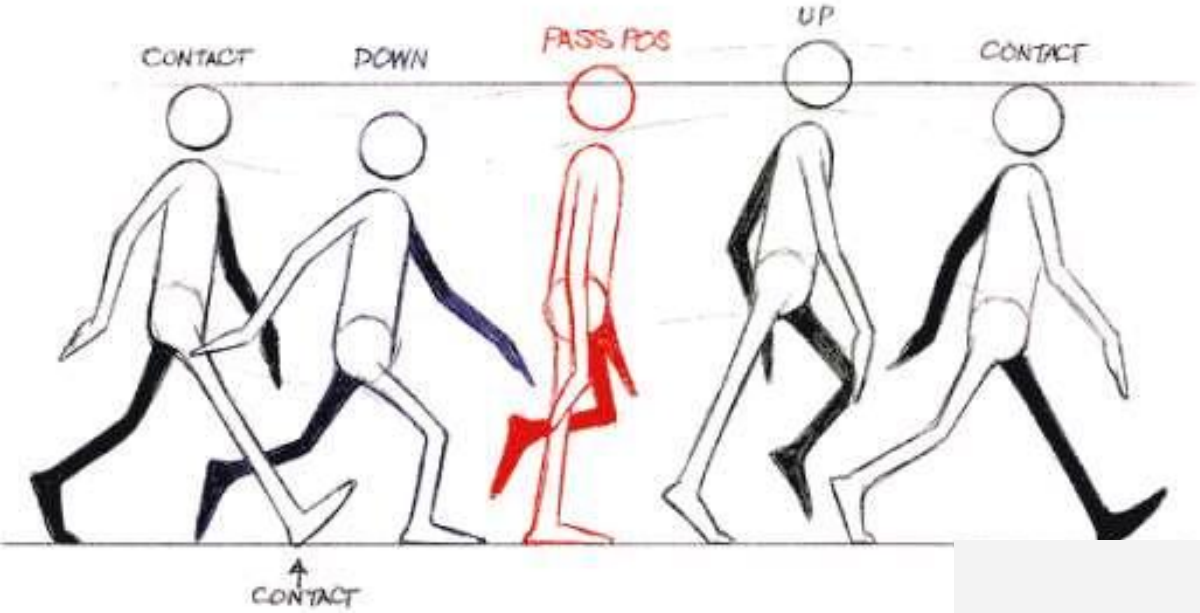
- w_q

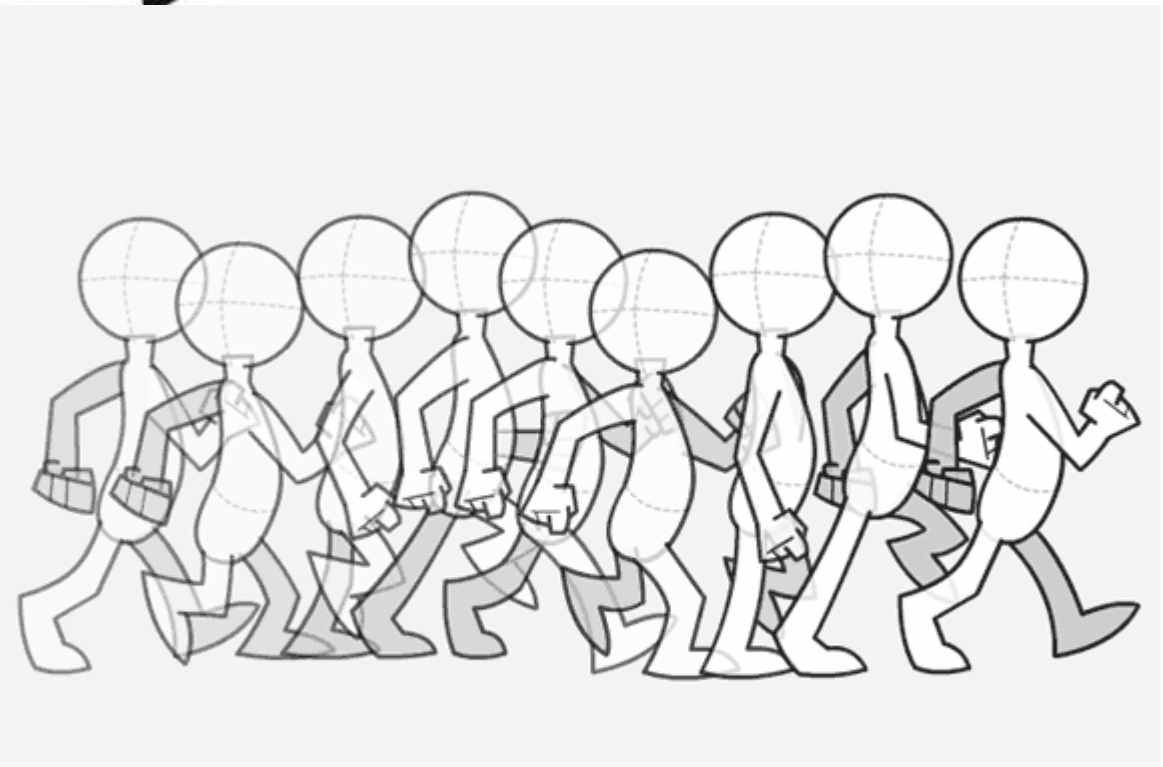
- silence



Walk Cycles



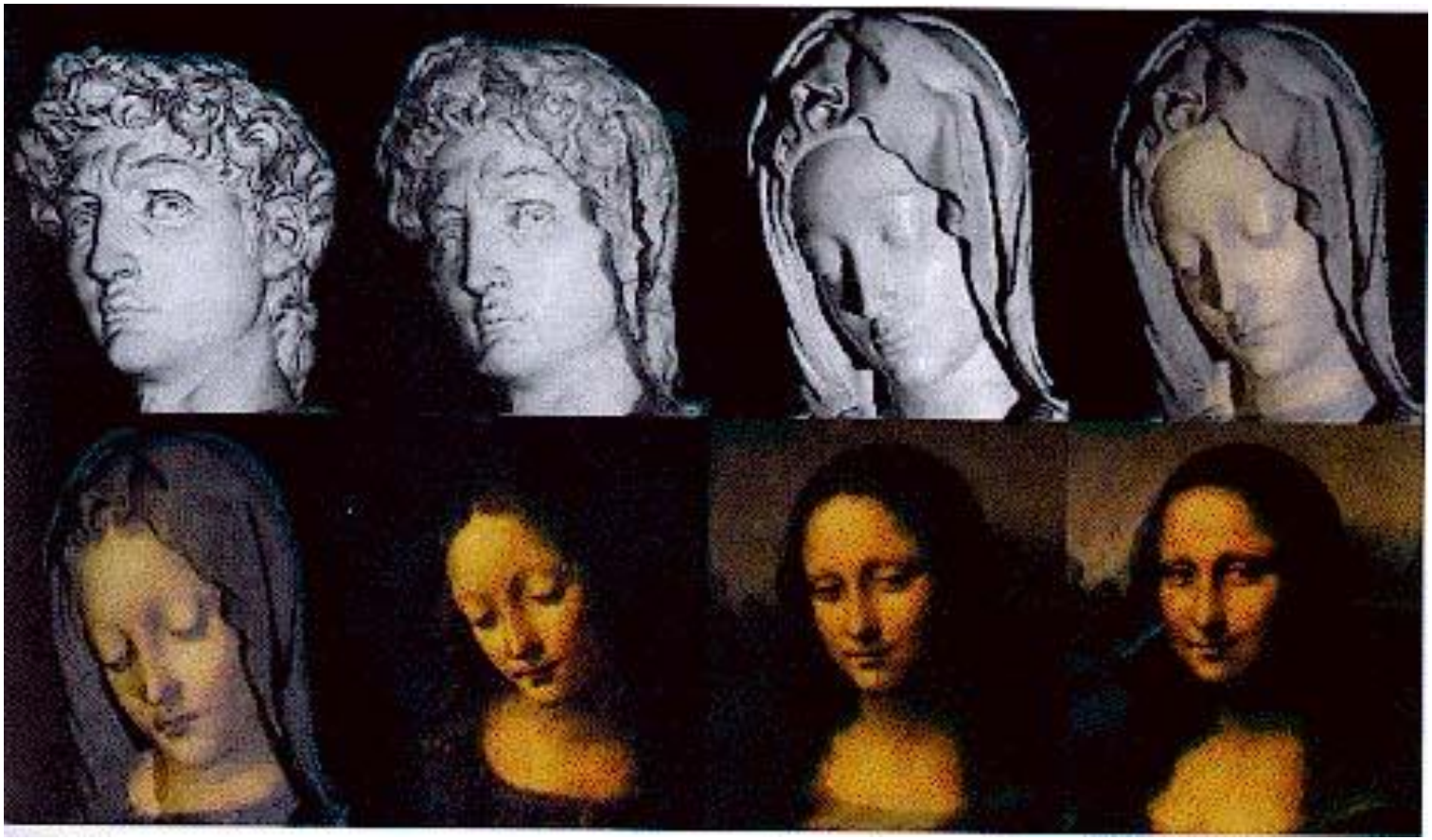

CONTACT
DOWN
PASS POS
UP
CONTACT
CONTACT



Morphing

- that changes (or morphs) one image into another through a seamless transition.
- Most often it is used to depict one person turning into another through technological means or as part of a fantasy or surreal sequence.
- Control points are used in order to stretch (and color) the source image smoothly to the destination image

Morphing

Morphing

Morphing