ΓΡΑΦΙΚΑ & ΕΙΚΟΝΙΚΗ ΠΡΑΓΜΑΤΙΚΟΤΗΤΑ

Διάλεξη #11

3ds MAX – Animation

Animation – Time Configuration & Key Filters...

- □ To create an animation (animated sequence of pics) (load "time_configuration.max")
 - first setup the "<u>Time Configuration</u>"

(It places at bottom – right, near the time controls buttons)

- Choose Frame Rate (NTSC)
- Choose numbers of Frames (e.g. if NTSC=30fps and a movie of 5" then 30x5=150fps)
 - Start Time: 0
 - End time:150
 - Length:150
 - Frame Count=151 (also counts frame0)

(Observe the Time Line bar)

- From "<u>Key Filters...</u>" set the parameters of animation (Position-Rotation-Scale-...) (It places at bottom – right, at <u>time controls</u> buttons)
 - Choose only "Position"
- The key-frames which will be created will refer only to positions (not to rotations or any other parameters)

3ds MAX Animation – Set Key mode (1/3)

- Lets start create the animation
 - We want to animate the sword
 - The animation will starts outside the frame and ends by landing the sword in a position in the frame
 - Go to <u>Top View</u> Select the Camera Modify Panel Parameters Enable "Show Cone" (That's make visible the angles of the camera even if it's no selected)
 - Adjust the Camera (& EndPoint) from <u>Top View</u> to the desirable position
 - Lock the Camera, so we never loose the framing,
 - Select the Camera (& EndPoint) from <u>Top View</u>
 - Hierarchy Panel Link Info Locks Move (enable x, y, z)

(from now on I can't change the framing - from Camera View)

Animation – Set Key mode (2/3)

- Ready to create the animation
 - Go to Top View Select the sword
 - The animation will ends at the position down the Logo
 - □ − So lets create the <u>key-frame</u> at the end of the Time Line first
 - Move the Time Line bar to the End Frame (150)
 - Enable "Set Key" mode (click the button at down right area)
 - You will notice a BIG RED Highlight at Time Line which indicate that we are in Animation mode
 - The active Viewport will also Highlight in RED
 - **To create a Key-Frame just click on the "Key" button next to "Set Key"**
 - Observe the end of Time Line There is a red (position) marker at frame_150

Animation – Set Key mode (3/3)

- To create the key-frame for the beginning go back to frame_0
- Select the object from Top View and move it outside the Frame (observe the Camera View)
- You can make any move adjustments from the Perspective View also
- With the object selected, at frame_0, in "Set Key" mode Click "Key" button (try to scroll the Time Line bar – we have some motion !!!)
- We can also press the PLAY button to see the animation (by default only in active Viewport)
- To be able to see animation in all Viewport
- EXIT from "Set Key" mode Open "Time Configuration" Playback Turn OFF "Active Viewport Only"

Animation – Key-frames vice Time

- To speed an animation we may use various ways
 - A simple way is to use key in Time Line bar
 - □ Speed the animation: select the key in frame_150 (5") and move it to frame_90 (3")

(select the key frame by clicking – it will turn to white from red)

- Slow the animation: select both keys and move them for a period at the beginning and also at the end there is no animation
- We can also press the PLAY button to see the animation (by default only in active Viewport)
- To be able to see animation in all Viewport
- EXIT from "Set Key" mode Open "Time Configuration" Playback Turn OFF "Active Viewport Only"

3ds MAX Animation – Trajectories

- To see the Trajectories of an animation
 - Choose (Select & Move tool) the object at the Top View
 - Go to Motion Panel "Trajectories"
 - (observe a <u>red line</u> which indicate the position of the object animation in any time)
 - Try and change the Time Line
 - There are <u>boxes</u> at the begin and at the end of the Trajectory Line (Those are the key-frames)
 - We can select them and move it and change the animation !!!
 - Go to "<u>Sub-Object</u>" mode (Motion Panel)
 - Click to select and move to change the animation
 - The spacing of the dots indicates the speed of animation (each dot is a frame)
 - We can make Trajectories visible permanent from Object Properties Display Properties Trajectory (BUT WE can't SELECT THEM AND EDIT)
 - EXIT from <u>"Sub-Object" mode</u> and from <u>"Trajectories</u>" Select the Object right click Object Properties

3ds MAX Animation – Curve editor (1/2)

- By default when we create an animation, also a slow-in and a slow-out of the object movement to the scene is created
 - We can adjust this by "Curve Editor" tool (Main Toolbar)

(Maximize the Top View and Observe the dots spacing of Trajectory Line)

- Select the Object and Open the "Curve Editor"
 - The highlighted object are the objects movement
 - The time runs from left to right
 - The curves (Red, Green, Blue) indicates the (x, y, z) positions
 - The type (slop) of the curve shows the type of movement
 - We want to change the slow-in & slow-out (in fact to change the slope of the curve)
 - Select all the frames (drag a rectangle) and click the "Linear Tangents" icon at the up area of Track View: Curve Editor

(The curves slop now are all linear and at the Top Viewport we can see that the dot spacing is equidistance - we have an animation with constant speed at any time)

Animation – Curve editor (2/2)

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Let's change only the slow-in...

- Select the Object and Open the "Curve Editor"
 - We want to change <u>ONLY</u> the slow-in (the slope of the curve at the end frame_80 to frame_120)
 - Select all the end_frames (frame_120 drag a rectangle) and click the "Auto Tangents" icon at the up area of Track View: Curve Editor
- Adjust the time
 - Zoom-in/out at "Curve Editor" (Ctrl + Alt + mouse roll)
 - Horizontally = move up-down
 - Vertically = move left-right
 - Select all the end_frames
 - Move separately the points at opposite side to a sorter frame (e. g .frame_100)
 - Use (ctrl + drag) when moving the points (<u>Ctrl + drag changes only time not values</u>)

(Play the animation and observe the slow-in)

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Animation – Set Auto Key mode (1/2)

- Another method to create animation is "Auto-Key" mode
 - In <u>Auto-Key</u> mode almost anything which take place creates <u>key frames</u> (so Be Careful)
 - **To enable Auto-Key mode click "Auto Key"** button at Animation Control area
 - Always when we start <u>Auto-Key</u> mode we must be at frame_0
 - Go to frame_120.
 - Camera View Grab the Logo and move it up outside the View Release the mouse
 - By releasing the mouse we create:
 - a key frame at frame_120 and also
 - a key frame at frame_0

(If we play the animation the object will move up words)

Note: If there is no Key frame before the current time when we create the first Auto Key – we create tow frame keys (one at the previous and one at the current position of time)

Animation – Set Auto Key mode (2/2)

□ A better way of using the "Auto-Key" mode

- We are in "Auto-Key" mode
- (Select the frame keys (drag a rectangle) and delete them (press DEL))
- Go to <u>frame_0</u>
- Place the object where you want to start the animation.

(Camera View – Select & move the Logo upwards outside from View)

- Enable <u>Set-Key</u> mode (click "Set Key" button)
- Click "key" icon to set up a frame key
- Enable now "Auto-Key" mode
- Go to frame_90.
- Move the object down to a position (by releasing the mouse we create a frame key at frame_90)
- **Enable** "Key Mode Toggle" button to move directly to next/previews key frames
- At last EXIT "Auto-Key" mode
- Use Curve Editor to edit and manipulate the positions keys (frames)

Note: If we point to an existing key frame (in Auto Key mode) and make any kind of changes to the position of the object then the key frame auto updated

3ds MAX Animation – Passes (1/2)

- □ Create your animations in "passes" or "layers"
 - Animate one parameter at time instead to do all at once it's better for animation and control reasons

(e.g. animate firstly at position and secondly at rotation)

- Lets create some <u>rotation</u> key frames
 - <u>Top View</u> Select the object (sword)
 - Motion Panel Parameters Rotation Euler Parameters Axis Order: "YXZ" Rotation Axis: "Z"
 - Choose "Rotation" Tool Choose "Gimbal" reference system
 - Open : "Key Filters..." Enable only "Rotation" (Uncheck anything else)
 - Enable "Set-Key" mode Go to frame_90 (end of the animation)
 - **Rotate at "x" axis (x:90)** Right click in Camera View Click on set "**Key**" button

(Just create a key frame for the rotation at frame_90)

(Observe that the key frame has two colors – red (for position) and green (for rotation))

- Go to frame_90 (begin of the animation) Choose "Rotation" Tool
- Perspective View Rotate at "z" axis (z:140) Observe that in z coordination we get strange numbers !!!
- Right click on "Rotation" tool to open the coordination dialog box (now we can see the actual values)
- Rotate at "z" axis (z:140) and also rotate at "y" axis (y:-20) Click on set "Key" button

(Just create a key frame for the rotation at frame_0)

3ds MAX Animation – Passes (2/2)

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- One of the animation principles of Walt Disney Studio is **Overlapping Action**
 - "Rotations and Position don't generally happened at the same time"

(start and stop at different

times)

- Lets adjust that in the "Curve Editor"
 - <u>Top View</u> Select the object (sword)
 - Open : "Curve Editor" Select "Rotation" "Y Rotation" & "Z Rotation"
 - Select (hold Ctrl) and move the <u>start</u> point of "Y Rotation"
 - Select (hold Ctrl) and move the <u>end</u> point of "Y Rotation"

(that change the time only – not the rotations value)

- **Rewind** and **Play** back to see the result
- Select both (drag a rectangle) the end points of "Y Rotation" & "Z Rotation" type at Frame:90

(Just set the rotations to end simultaneously at frame_90)

Rewind and **Play** back to see the result

Animation – Dope Sheet

- □ The "Dope Sheet" is like a spreadsheet
- It contains all the (animation) information for each single frame of animation
 - We can move key frames as blocks to change the overall time of animation

Go to "Graph Editors" menu– "Track View - Dope Sheet"

- Select an object and see in the "Dope Sheet" the key frames animation for this object
- Deselect the object and go to View Filters Show Only:
 - activate "Animated Tracks"
 - dis activate "Selected Objects"

(All the animated tracks will displayed regardless what is selected in the Viewport)

- The "light grey" rows are <u>tracks</u>
- The "dark grey" rows are <u>categories</u> of tracks (they aren't tracks at all)
- Select the entire frame keys Click on "Modify Child-Keys"
- At "Word line" we can select globally
- Select to work not to frame keys mode but at ranges mode Click on "Edit Ranges"
- At "Word line" we can select globally and speed up or down the overall animation

Ερωτήσεις

