MODUL PRATIKUM

MATA KULIAH
CREATIVE ANIMATION

TOPIK
Modeling Spline & Surface Modifier

"Knight-Set of Chess 1"

Penyusun:
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KATA PENGANTAR

Alhamdulillah, Puji syukur kami panjatkan pada Tuhan Yang Maha Esa bahwa kini telah tersusun Buku Panduan dan Modul Praktikum Mata Kuliah "Creative Animation" Universitas Esa Unggul.

Tujuan diterbitkannya modul praktikum ini adalah sebagai panduan dalam perkuliahan:

1) Pengaturan kegiatan praktikum bagi mahasiswa
2) Melaksanakan proses praktik dari bidang keilmuan dalam ilmu creative animation
3) Melaksanakan proses pembelajaran kasus, analisis praktis dan analisis profesional dalam praktik creative animation
4) Bagian dari proses belajar mengajar dan praktikum pada program pendidikan S1 Creative Animation

Harapan kami semoga modul praktikum ini dapat bermanfaat sesuai tujuan dan sasaran pendidikan.

Jakarta, 24 Maret 2018
Universitas Esa Unggul

Nuryadi

DAFTAR ISI

Tujuan Intruksional

- Memberikan Pengantar dan Perkenalan atas mata kuliah Creative Animation Mempersiapkan mahasiswa agar mampu mempromosikan diri dan mampu berkomunikasi dengan audiens.
- Pengenalan software Autodesk 3D Studio Max yang sebagai jembatan antara para desainer, engineer dan industry.

Sasaran Pembelajaran

Sasaran pembelajaran praktikum manual mata kuliah Creative Animation ini adalah mahasiswa S1 Desain Komunikasi Visual semester 3 Fakultas Desain dan Industri Kreatif Universitas Esa Unggul.

Sumber Pembelajaran

Sumber pembalajaran yang digunakan sebagai rujukan adalah:

1. 3dsmax7 Fundamentals, NewRiders, TedBoardman
2. 3d'sMax5Fundamentals, Techmedia, TedBoardman
3. Inside3dsmax7, NewRiders, TedBoardman

Sumber Daya

A. Sumber daya manusia:

1. Dosen pemberi kuliah pengantar : 1 orang
2. Asistensi dosen : orang

B. Sarana dan Prasarana

Ruang Lab Komputer Universitas Esa Unggul

Ruang Lingkup

Ruang lingkup praktikum Creative Animation meliputi penjelasan tentang:

1. Mendeskripsikan fungsi dan tujuan, pengembangan keterampilan & pengetahuan dalam 3D Modelling Animasi.
2. Modelling dan creation of 3D Objects berbasis komputer dengan 3DS Max
3. Mengaplikasikan teknik dasar 2D Splines, Shapes ke dalam 3D Object
4. Mengaplikasikan teknik 2D Splines, Shapes & compound object
5. Mengaplikasikan konsep 3D Modeling, Creating & Modifying Objects - Sesi 1
6. Mengaplikasikan konsep 3D Modeling, Creating & Modifying Objects - Sesi 2
7. Mengerti dasar-dasar Lighting & Camera Sesi 1

8. Mengerti dasar-dasar Lighting & Camera Sesi 2
9. Mengerti konsep membuat animasi dan motion dengan *Keyframe Animation*
10. Mengerti konsep dalam memberikan Texture with Max Sesi 1
11. Mengerti konsep Simulation & Effects

Alat dan Kelengkapan

1. Komputer, laptop, Wacom, Projektor, Digital Pen, Mouse 3 Button.

Pengendalian dan Pemantauan

1. Absensi mahasiswa dan dosen yang telah ditanda tangani

2. Format asistensi tugas yang telah ditandatangai setiap adanya asistensi, diberi nama jelas dosen yang menilai serta peserta didik yang bersangkutan

3. Pedoman penilaian pencapaian kompetensi

Pelaksanaan

Modeling 3D, set of chess. Many different techniques can be used to create the objects in your scene. The techniques you learn in these tutorials can be adapted to any style of modeling you need to perform. For instance, if you're building models that will be incorporated into a game, you'll be most interested in low polygon modeling techniques. The same techniques will be equally beneficial when building highly detailed models for architectural presentations or motion pictures.

Creating primitive objects
   Using a modifier to alter an object's shape.
   Creating and editing spline objects
   Converting splines into geometry using modifiers
   Setting up viewports with background images
   Editing a model at sub-object levels
   Features in Editable Poly
   Using Merge and Xrefs to bring external objects into your scene
   Using the Graphite Modeling Tools Ribbon to edit poly objects

Modeling a Chess Set

In this tutorial, you will create four pieces of a chess set—a pawn, a bishop, a rook and a knight—using various modeling tools and techniques.

In this tutorial, you will learn how to:

- Create and edit spline objects.
- Use Lathe modifier to create a 3D object.
- Use Face extrusion to create geometry.
- Use Boolean compound objects.
- Use viewport background images.
- Use the Surface modifier.

Skill level: Beginner

Modeling a Knight

In this lesson, you will create a knight for a chess set using custom splines and the Surface modifier. The Surface modifier makes a 3D surface from an arrangement of intersecting splines.

Modeling a knight presents a special set of challenges: its unique contours demand that it be sculpted carefully. The Surface modifier is ideal for this type of modeling.

Features and techniques covered in this lesson:

- Building a spline cage.
- Refining and Connecting spline vertices with new segments.
- Applying and adjusting the Surface modifier.
- Using the Symmetry modifier.
- Extruding patches using the Edit Patch modifier.

Skill Level: Intermediate

Time to complete: 1 hour

Set up the lesson:

1 On the Quick Access toolbar, click the Open File button, navigate to the *\modeling\intro_to_modeling* folder, and open *Knight_Start.max* .

   The scene is empty except for a background picture that you will use as reference as you model the knight. If you cannot see the reference picture, follow these steps.

2 Make sure the Front viewport is selected and then press Alt+B.

3 On the dialog that appears, click the Files button.

4 Locate the *ref-chess.jpg* image in the *\sceneassets\images* folder and double-click it.

5 Click OK to exit the Viewport Background dialog.

Draw the knight outline:

1 Maximize the Front view by pressing Alt+W.

2 On the Create panel, click Shapes, and then click Line.

3 On the Creation panel > Creation Method rollout, set both Initial Type and Drag Type to Smooth. This will help set the base profile, given the curved nature of the chess piece.
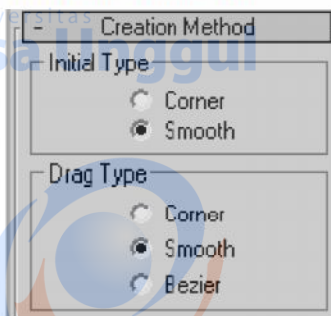

Create the inner spline cage:

1 You will start adding detail where the head intersects the neck. On the Modify panel > Geometry rollout, turn on Connect and then click Refine.

9
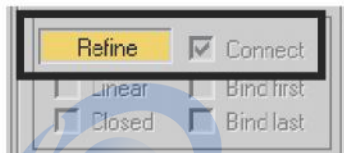
NOTE Refine adds vertices to a spline. If the Connect option is on, all inserted vertices will be connected by segments in the order they were created.

2 Click the Bezier Corner vertex at the intersection of the head and the front of the neck.

A dialog opens:
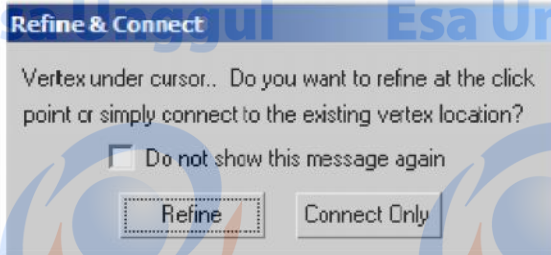
This dialog points out that there is already a vertex where you clicked. You still have the option to refine the spline, adding yet another vertex very close to the existing one, or you can simply use the existing vertex and connect it to others you will be inserting. Typically, use the Connect Only method when this warning appears.

3 Click Connect Only.

NOTE The warning dialog can be distracting, and some users prefer to turn on "Do not show this message again" before they close it. On the other hand, if the dialog does *not* appear, you might forget which behavior is in effect while you use Refine and click near an existing vertex. We leave this choice up to you.
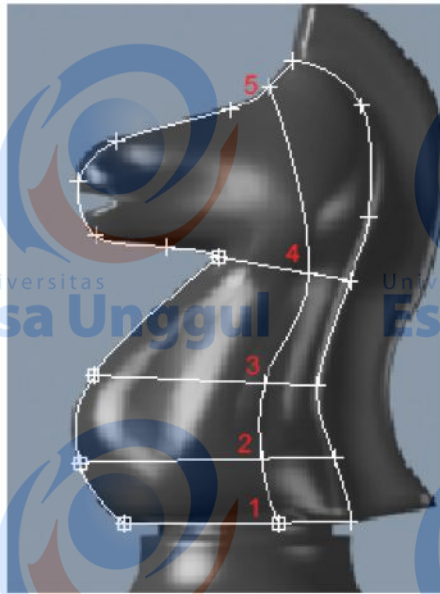
4 Click a point to the right at the back of the neck.
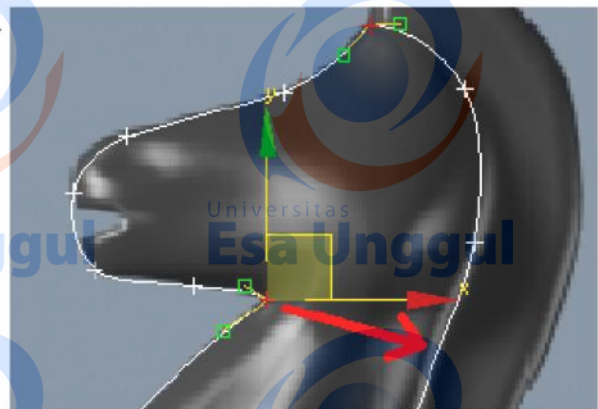
5 Right-click to finish the command. You now have an additional segment going from the front to the back of the neck.
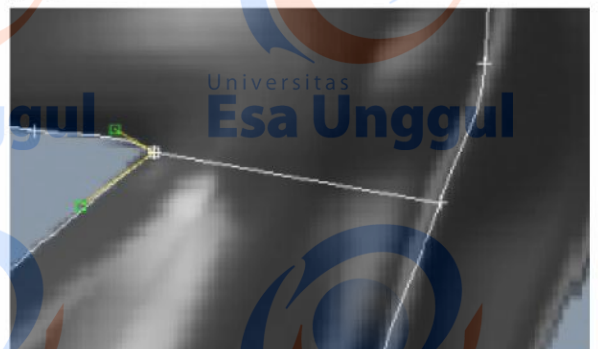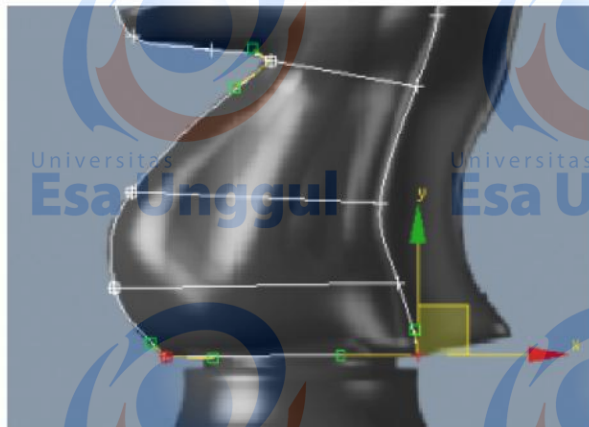
7 Use Refine/Connect to add a vertical line of detail going from the neck to the head.

6 Add two more "levels" to the neck as shown in the illustration below.

8 Continue adding detail until the spline cage looks similar to the following illustration.

Delete unwanted vertices:

The next step is to ensure that there are no loose vertices on the spline cage. In this method of modeling, it is essential that the spline cage is made of three- or four-sided areas only.

1. Make sure the spline is still selected and that you are still at the Vertex sub-object level.

2. Look for any loose vertices and select them.

3. Press Delete to remove the unwanted vertices. Make sure that a quad area has no more than four vertices, where segments intersect.
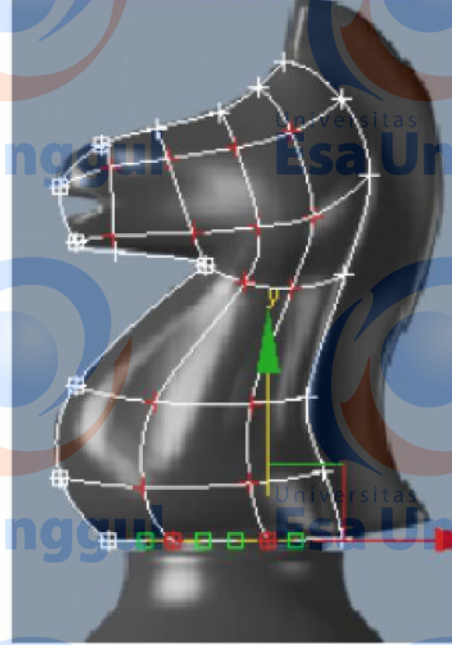

Fine-tune the spline cage:

The next step is to adjust the spline cage to get a nice flow of segments. When you refined the spline cage, you introduced a number of intersecting segments and subsequently a number of intersecting vertices. It is very important that these vertices which share the same position in space be moved together.

1. Make sure the spline is still selected and that you are still at the Vertex sub-object level.

2. In the Selection rollout, turn on Area Selection and leave the value at 0.1. This ensures that when you select a vertex by clicking it, all vertices that are within the distance specified in the threshold value get selected as well.

3. Use the Select And Move tool to relocate vertices to get a nice flow of segments in the spline cage.

4 In the Top viewport, move the selected vertices down on the Y axis (green axis).

Give the spline cage volume:

So far, you've built everything in the Front viewport. The collection of segments lies therefore in the same plane. In this step, you will adjust the spline cage so that it starts shaping into a 3D volume.

1 If the Front viewport is still maximized, press Alt+W to return to the four-way viewport layout.

2 Click Zoom Extents All to see the spline cage in all four viewports.

3 Using the Select tool and the Ctrl key, select all the internal vertices plus the two center ones on the bottom segment.
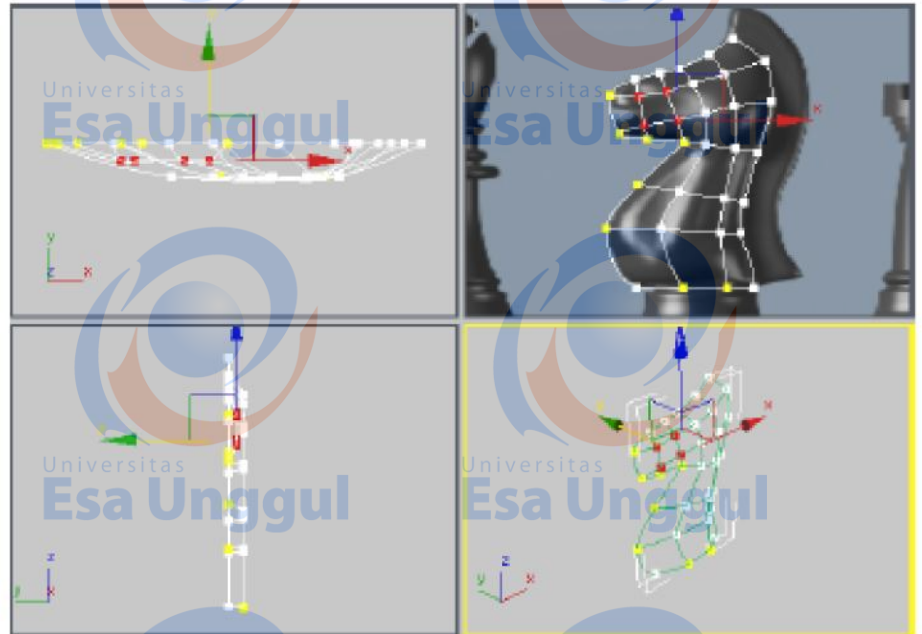
**Adjust the tangents on the perimeter:**

1. Select all the vertices that run along the back of the neck, except for the top one.

2. Right-click the viewport and convert the selected vertices to Bezier Corner.

3. Move the angled tangents so they are in a more vertical position. This will give the segments a stronger angle of attack as they meet the mirror line.

BEFORE   AFTER
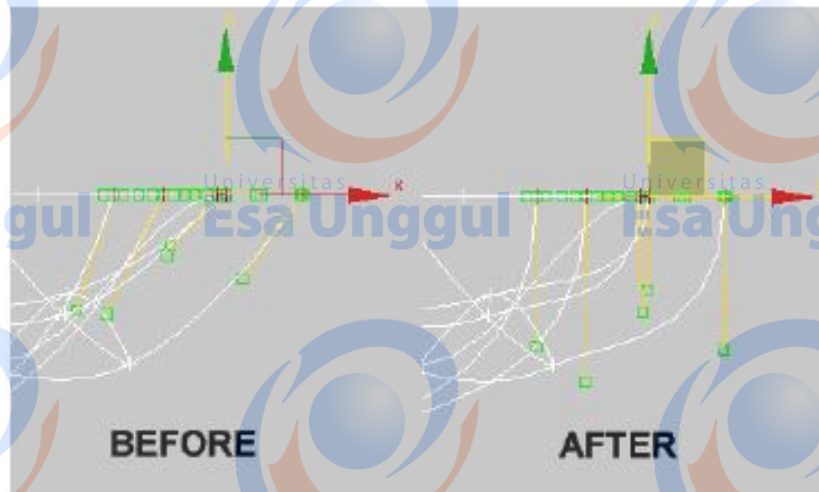
TIP If you try to move the tangents and find the direction locked in one axis or another, press F8 to constrain motion to the XY plane.

4   Repeat this procedure on the two vertices near the mouth, and those running up the front of the neck.
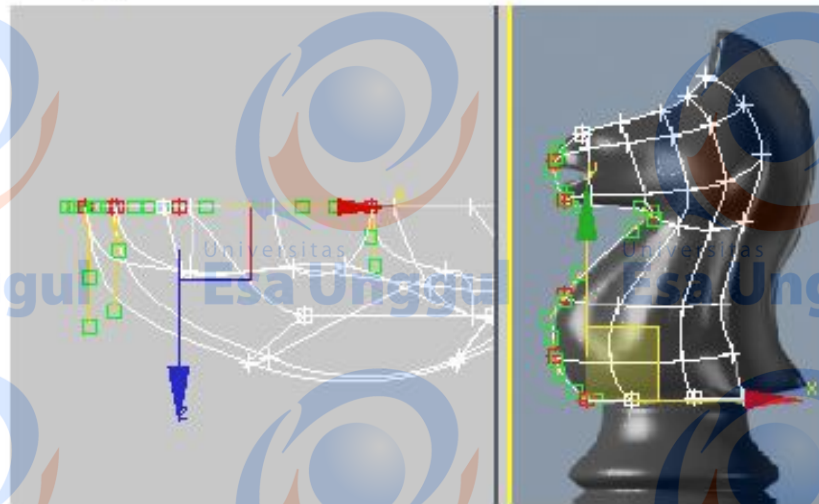
5   Repeat the procedure on the vertices running along the top of the head, but then use the Front viewport to make the tangents horizontal.
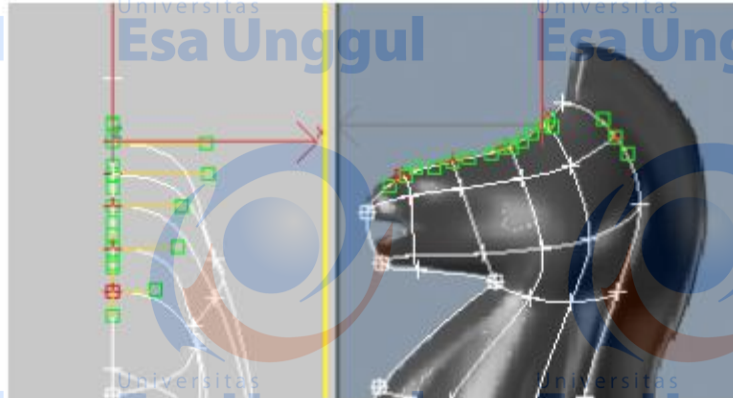
Test the Surface Modifier

You will eventually mirror this spline arrangement to make the other side of the knight, but before doing so, you need to check the current setup to see if the Surface modifier works on it.

The Surface modifier places a 3D surface over each set of three- and four-sided polygons formed by the splines.

The polygons must be completely closed in order for the Surface modifier to make the 3D surface. By trying out the Surface modifier now, you can correct any "holes" in the surface before you mirror the splines.
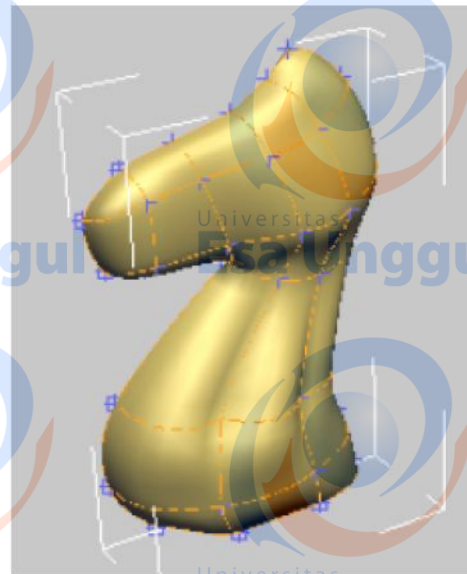
1   With *Line01* selected, exit the Vertex sub-object level.

2   From the Modifier List, choose Surface from the Object-Space Modifiers section. Depending on how you built your spline cage, the appearance of the knight in the Perspective viewport might look solid or hollow.
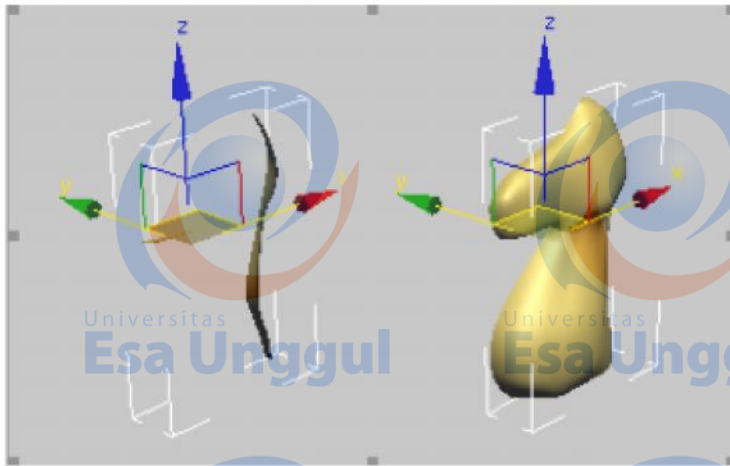
3   In the Parameters rollout, try turning the Flip Normals option on or off until the knight appears as shown on the right side of the illustration above.

4   Expand the Line entry in the modifier stack and then click Vertex. Turn on Show End Result so you can work on the spline cage and see the effect of the Surface modifier simultaneously.
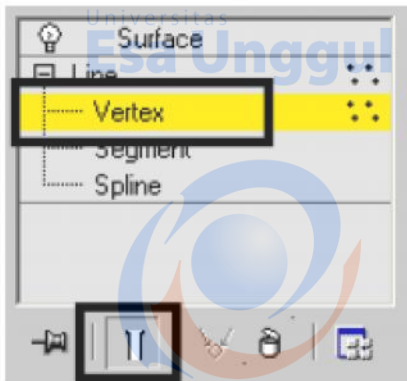
5   In the Front viewport, select the vertex on the neck where you see a dip in the muscle tones. Right-click and convert that vertex to Bezier Corner.

efine the mane line:

1   Adjust the Perspective viewport so that you are looking at the back of the neck.

2   Using Connect/Refine, start from the vertex at the very top of the head and work your way down to refine a mane line as shown in the following illustration.

Starting Point

As you refine the segments, surface patches temporarily disappear from view but reappear once you finish the command. This is because you are introducing additional vertices and this creates patch areas that have more than four vertices. Once you are done refining the spline cage, however, the end result is made up of quads again and therefore displays correctly.

3 Exit the Vertex sub-object level and then click the Surface modifier to go to the top of the stack.
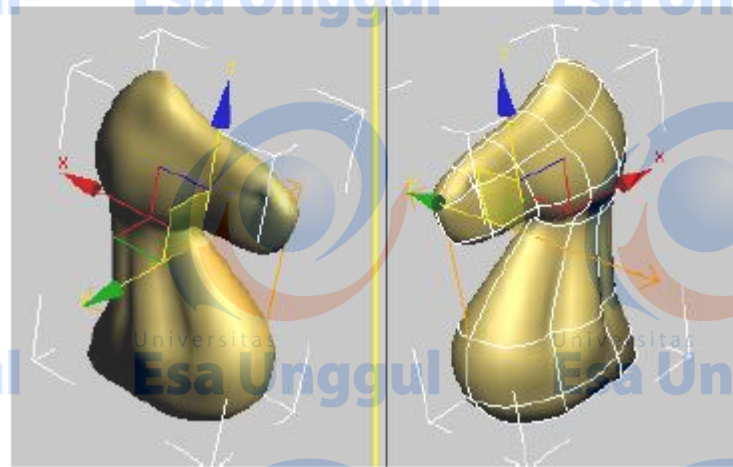
Mirror the spline arrangement:

1 If you haven't done so already, highlight the Surface modifier on the modifier stack.

2 From the Modifier list choose Symmetry.

3 On the Parameters rollout, set Mirror Axis to Z.

4 Orbit around the object in the Perspective viewport to see the full 3D object.

Extrude and adjust the mane:

1   Highlight the Surface modifier on the modifier stack. From the Modifier list, choose Edit Patch. This inserts an Edit Patch Modifier above the Surface modifier and below the Symmetry Modifier.

2   If necessary, turn off Show End Result.
    You should be able to see only one half of the knight in all viewports.

3   On the Selection rollout of the Patch modifier, choose the Patch button.

4   In the Perspective viewport, select the patches that make up the horse's mane.
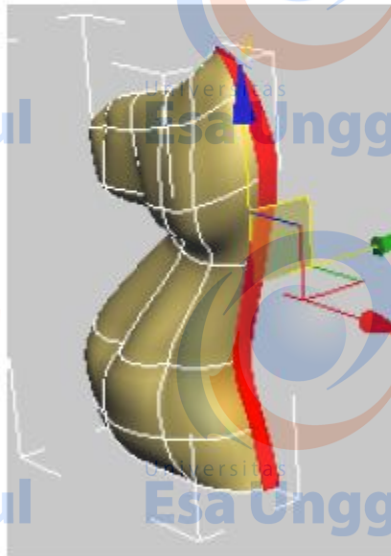
5   In the Geometry rollout > Extrude & Bevel group, click the Extrude button.

6   Bring the cursor close to the selected patches in the perspective view and then click and drag to extrude the patches. Keep an eye on the Front viewport for reference.
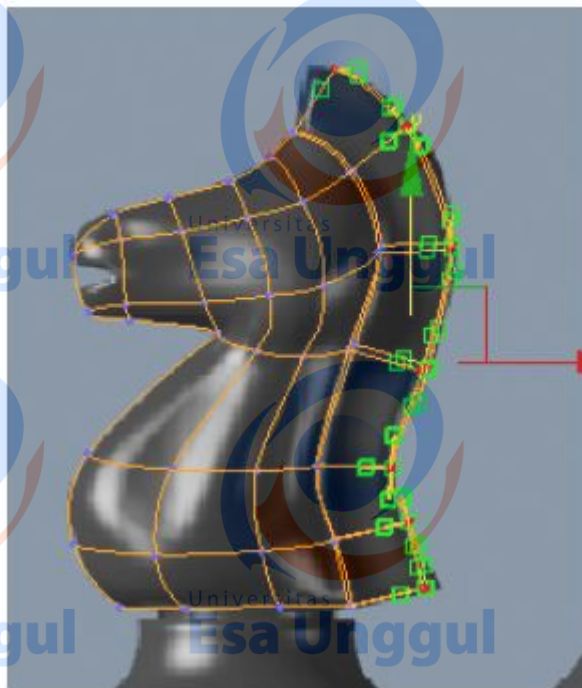
20

7   On the Selection rollout, switch from Patch to Vertex and turn on Show End Results.

Because of the direction of the extrusion, you need to adjust the vertex position to give the Symmetry modifier a little help.
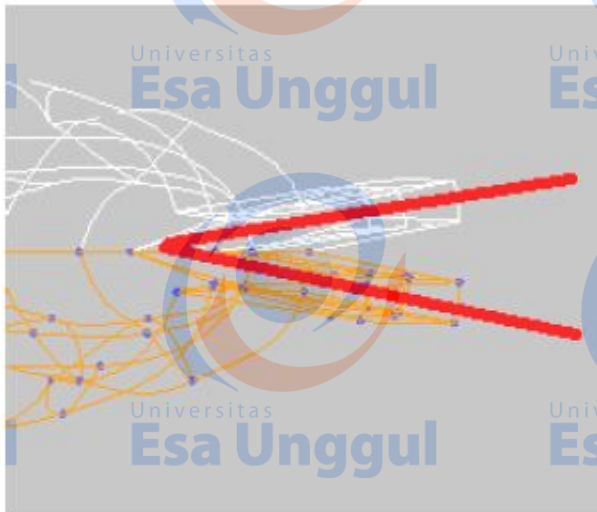
8   In the Front viewport, use region selection to select all vertices on the outer edge of the mane. Use the Ctrl key if necessary.

9 In the Top viewport, move the selected vertices up until they intersect along the mirror line. Keep an eye on the other viewport to see if the Symmetry modifier worked nicely to weld the seams.
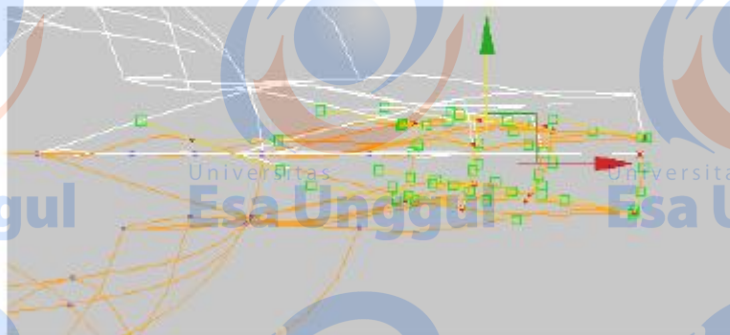
NOTE This was a rather simplistic way of adjusting the mirror line. Ideally, you want to move the vertices individually or in groups, while at the same time adjusting tangents for better effects.

10 Adjust the positions of the vertices and tangents in the Front viewport to follow the reference image and create a nicely flowing mane.
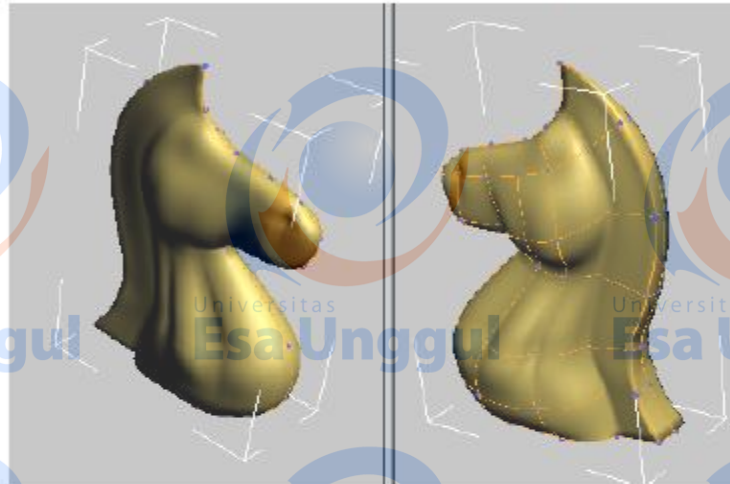
Create the base:

Even though you could have created the base as part of the same spline cage, it is easier to build it as a separate object and then attach the two objects together as a single mesh. The base is a simple lathed object, much like the ones you created in the previous lessons.

1 From the Create menu, choose Shapes > Line.

2 On the Creation Method rollout, set both the Initial Type and Drag Type to Corner.

3 In the Front viewport, click a point in the top center of the base, just below the knight.

4 Hold down the Shift key to constrain the line to the vertical direction, and then click a point at the bottom center of the base.