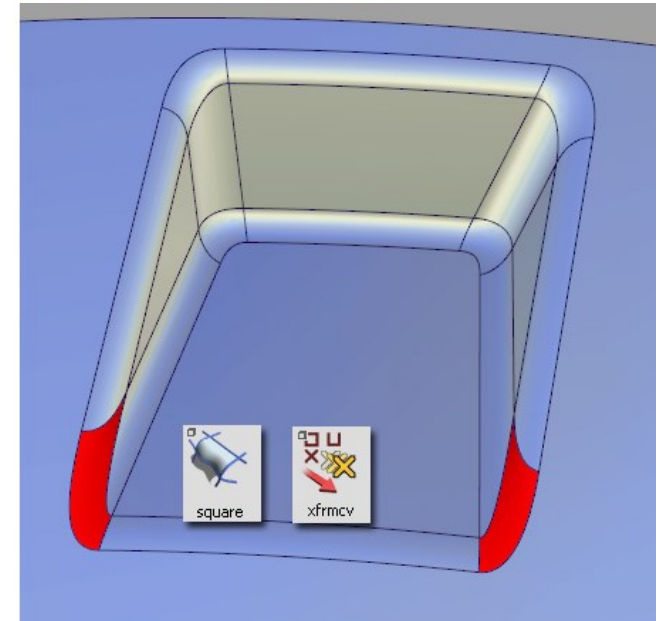
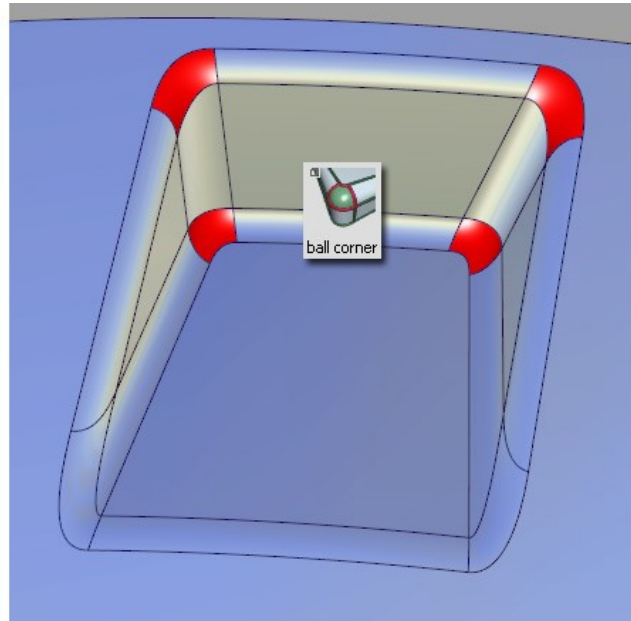
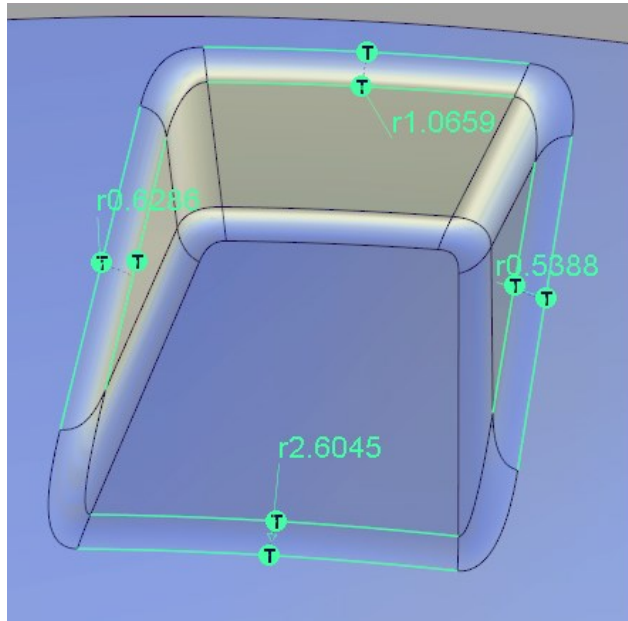


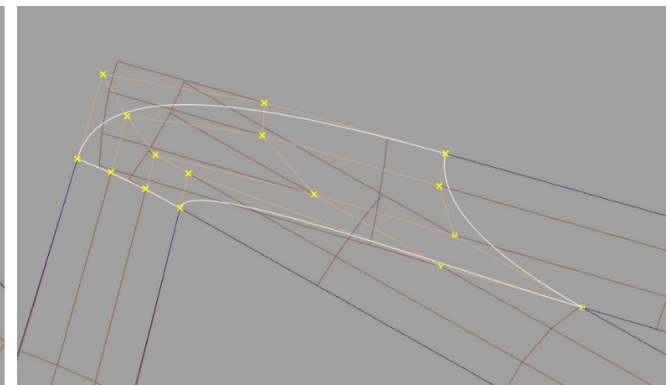
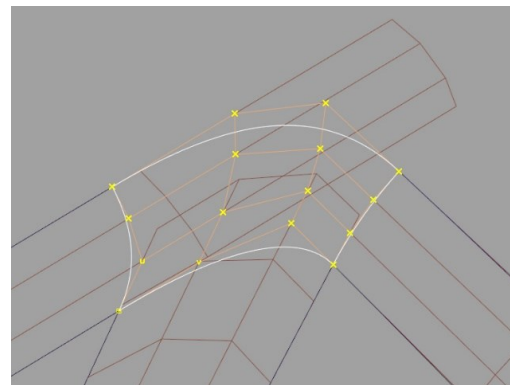
A4.16 : Ball Corner Tool & Acute Angles

This tutorial looks at a small feature with fillet radii of 0.5mm – 2.6mm. Barry discusses how different studios deal with these small fillets, and in this case he builds to G1 Tangent continuity. The Round tool does a quick job, but isn't accurate enough for production work, so the main fillets are rebuilt using the Surface Fillet tool, and then the first 4 corner blends are built using the Ball Corner tool, and the remaining 'acute angle' corners are built with Square and manual CV adjustment.



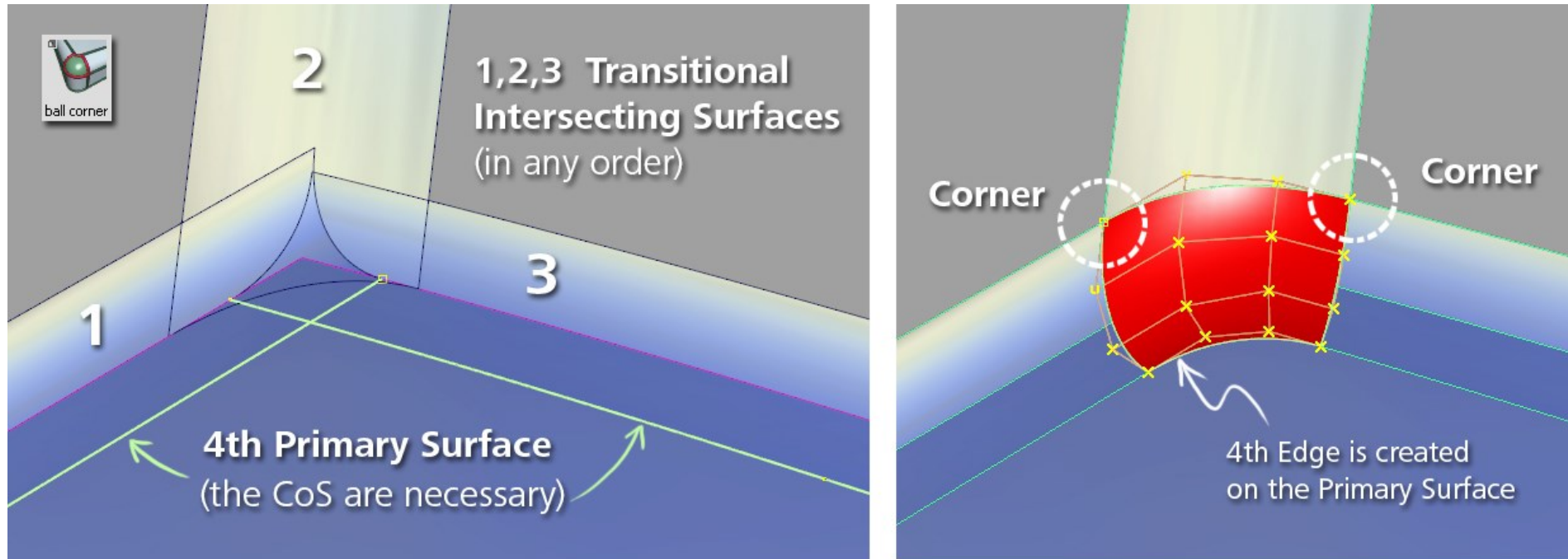
The key to success on all the corners is to align the CVs of the blend surface with the Hulls of the main fillet surfaces.

In this case, because we are creating only G1 tangent continuity, then the first two CVs on the blend surface are aligned with the fillet hulls.



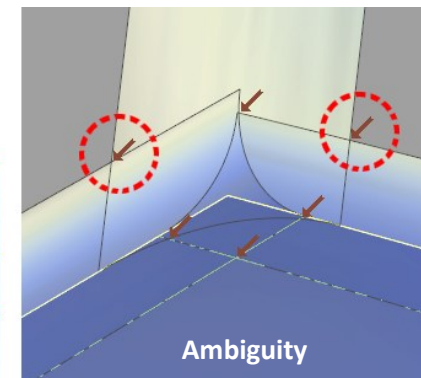
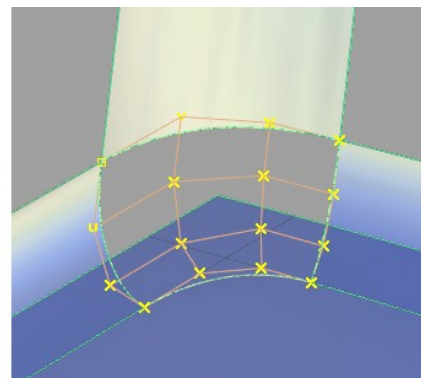
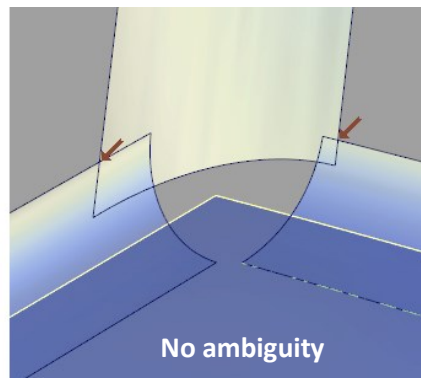
METHOD : Ball Corner Surface Tool

The first part of this tutorial uses the Ball Corner surface tool. If you have not used it before, it is useful to understand the terminology used and what the tool is expecting as inputs. Firstly the three fillets coming into the corner are selected, and then the surface where the fourth edge needs to be created:



The resulting corners will be found automatically if there is no ambiguity:

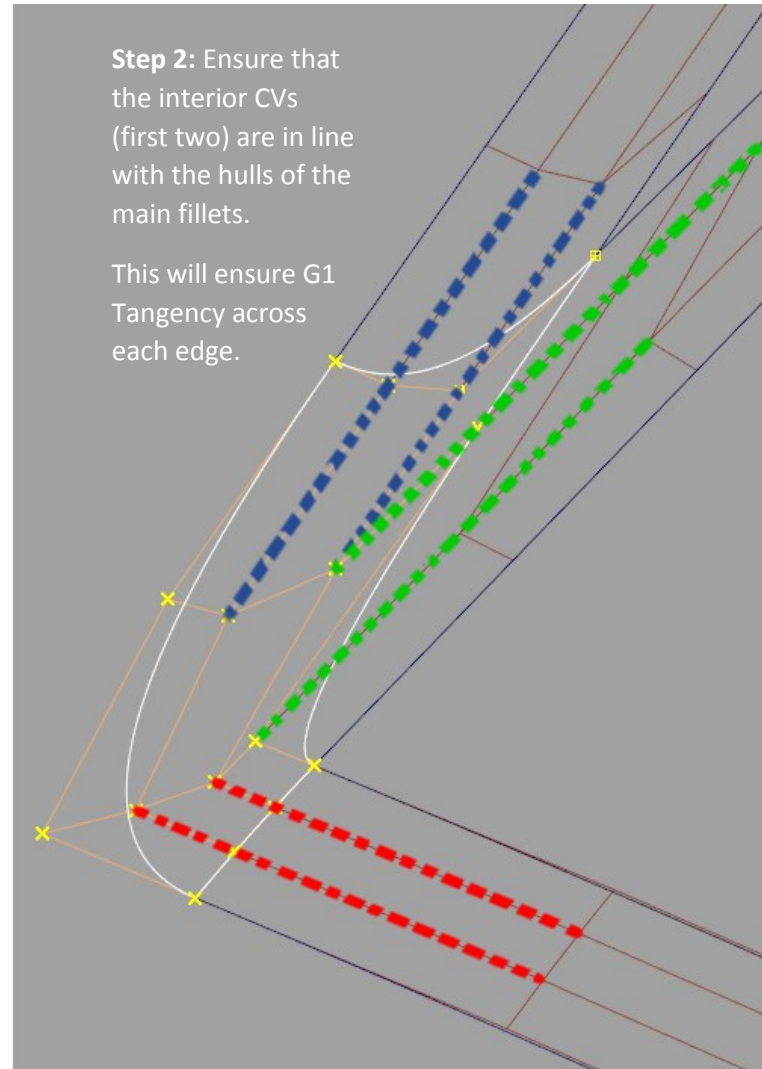
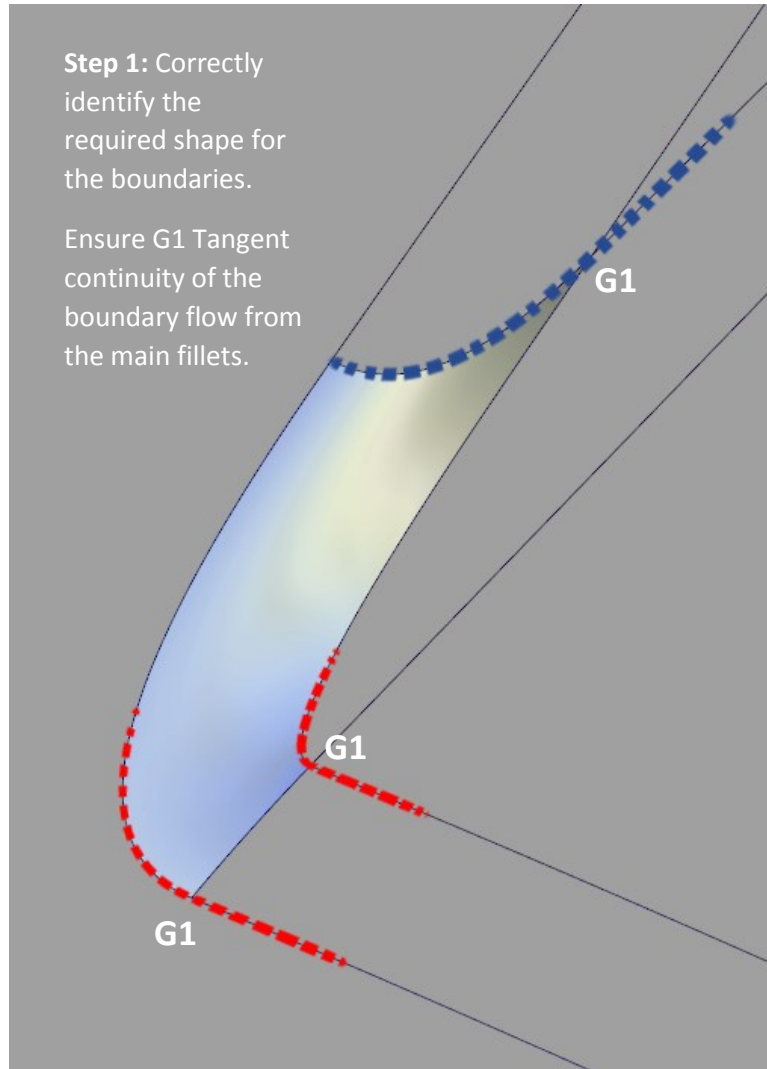
If the three fillets don't overlap, so that the tool can identify the 'corners' without ambiguity, the ball corner surface is built automatically



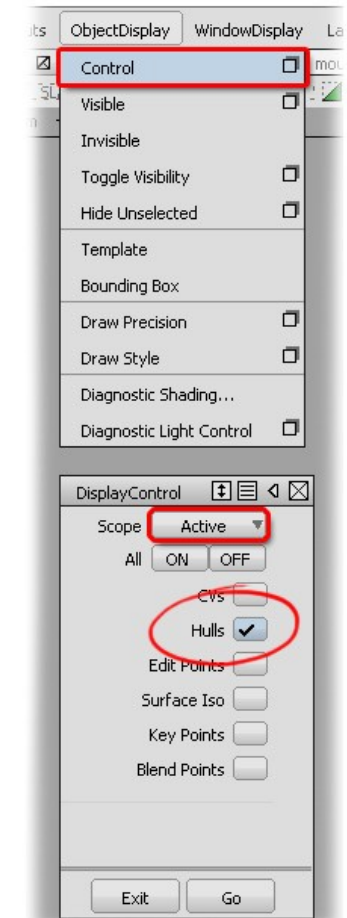
If there is overlap, then you will be asked to click onto the two red arrows that should become the corners.

METHOD : Acute Angles

The fifth corner to be created has very acute angles, and the ball Corner tool fails to build a successful surface. In this case, the Square tool is used, combined with manual adjustments of CV positions to achieve continuity.



To display hulls only, without CVs, use Object Display > Control:



INDEX

Time	Topic	Menu/Palette	Tool	Options
0.27	Discussing the Round tool, and where it fails for Class A surfacing			
	Ball Corner Tool			
2.04	Creating the Linear Fillets to G1 continuity	Surfaces > Multi-Surface Fillets	Surface Fillet	
2.21	Using Edge Align on the fillet to create the boundary for the ball corner	Surfaces > Multi-Surface Fillets	Surface Fillet	<i>Edge Align</i>
3.10	Ball Corner tool for corner 1 – First attempt	Surfaces	Ball Corner	
4.02	Checking the continuity on the first ball corner	Evaluation > Continuity	Surface Continuity	
4.16	Ball Corner tool for corner 2 – First attempt	Surfaces	Ball Corner	
4.36	Modifying the pivot length ratio to control the shape of the ball corner			
5.05	Discussion of using G1 or G2 curvature for small radii			
5.53	Changing the main linear fillets to degree 3 instead of degree 5			
7.00	Ball Corner tool for corner 1 – Second attempt	Surfaces	Ball Corner	
7.25	Comparing results built on degree 3 and degree 5 main fillets			
8.11	Ball Corner tool for corner 2 – Second attempt	Surfaces	Ball Corner	
8.38	Ball Corner tool for corner 3	Surfaces	Ball Corner	
8.56	Ball Corner tool for corner 4	Surfaces	Ball Corner	
9.14	Fixing corner 3 – picking main fillets in a different order			
	Square tool for Acute Angle blend			
9.58	Ball Corner tool fails for corner 5 due to the acute angles			
10.18	Build corner 5 with the Square tool instead...			
11.14	Sketch the patch layout, aiming for G1 continuity borders			
11.31	Discussing the difficulty of acute angles			
12.32	Creating Blend Curves to define the first boundary	Curves > Blend Curve Toolbox	Create Blend Curve	
13.00	Matching the blend curve CV locations to the main fillet hull lines	Control Panel > Xform CV > Move	Slide	

14.02	Using View Twist and Azimuth/Elevation to check the CV locations			
14.35	Blend curve for the second edge	Curves > Blend Curve Toolbox	Create Blend Curve	
14.56	Blend curve for the third boundary	Curves > Blend Curve Toolbox	Create Blend Curve	
15.23	Aligning blend curve CVs to the main fillet hulls			
16.17	Checking the relationship between opposite side curves			
17.10	Trim Convert the first main fillet	Surface Edit > Trim	Trim Convert	<i>3D Trimming</i>
17.31	Discussing why not to Trim the next main fillet			
17.49	Building the Square surface	Surfaces > Boundary Surfaces	Square	
18.42	Understanding the importance of CV alignment to continuity			
20.02	Trimming surfaces to make the surfaces easier to view	Surface Edit > Trim	Trim	<i>3D Trimming</i>
20.41	Refining CV locations			
21.06	Checking continuity	Evaluation > Continuity	Surface Continuity	
21.19	Review of key techniques used to achieve continuity			