

Case M12 Radius of Curvature

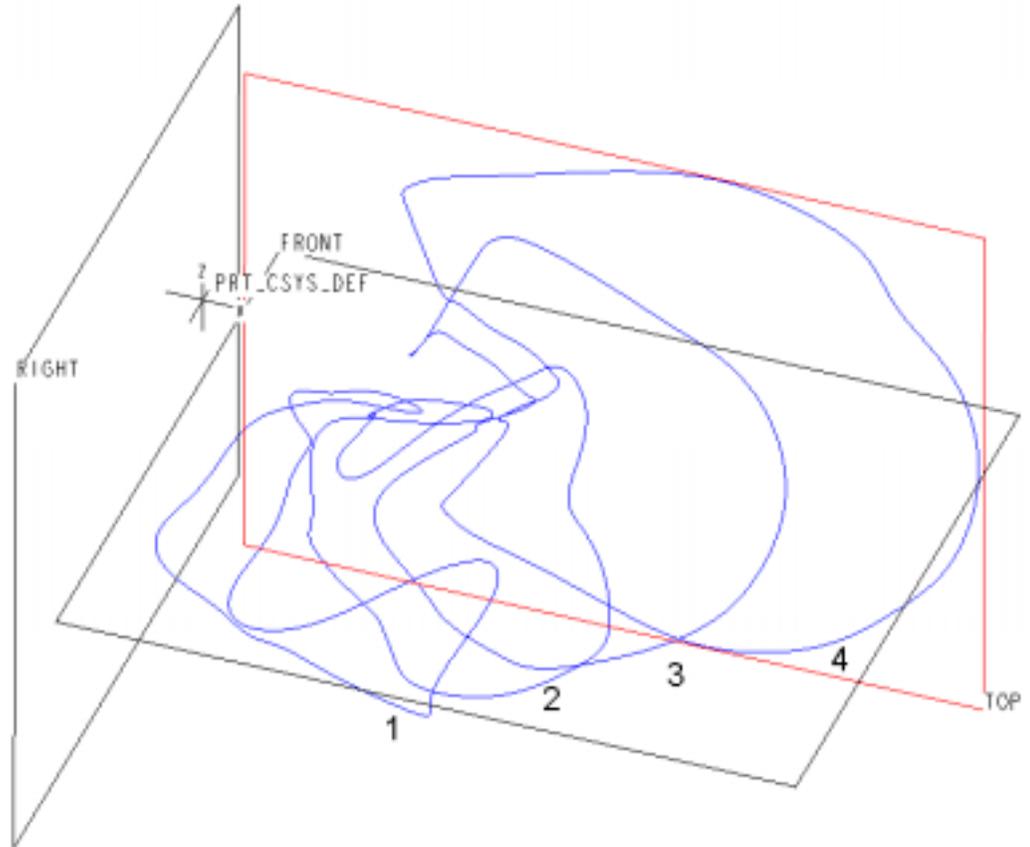
DW 7/11/01

Issue:

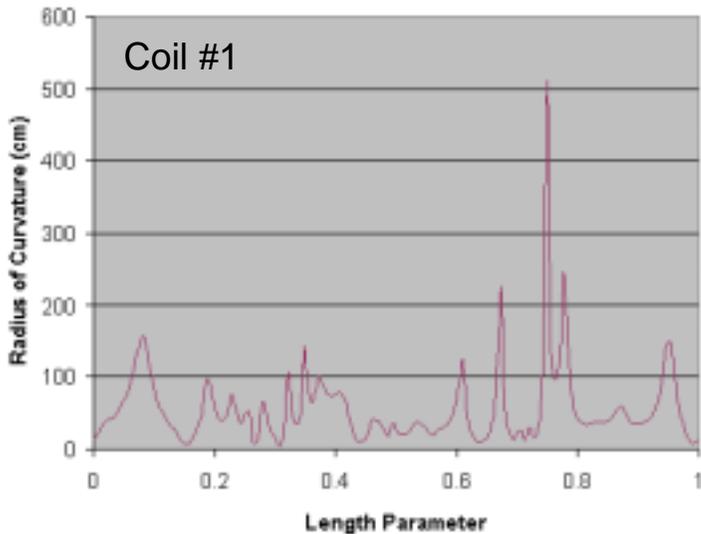
B-spline of coil winding center has varying radius of curvature with minimum < 10-cm

Coil #	Min Radius (cm)	Max Radius (cm)
1	6.6	510
2	4.7	750
3	7.3	320
4	5.5	210

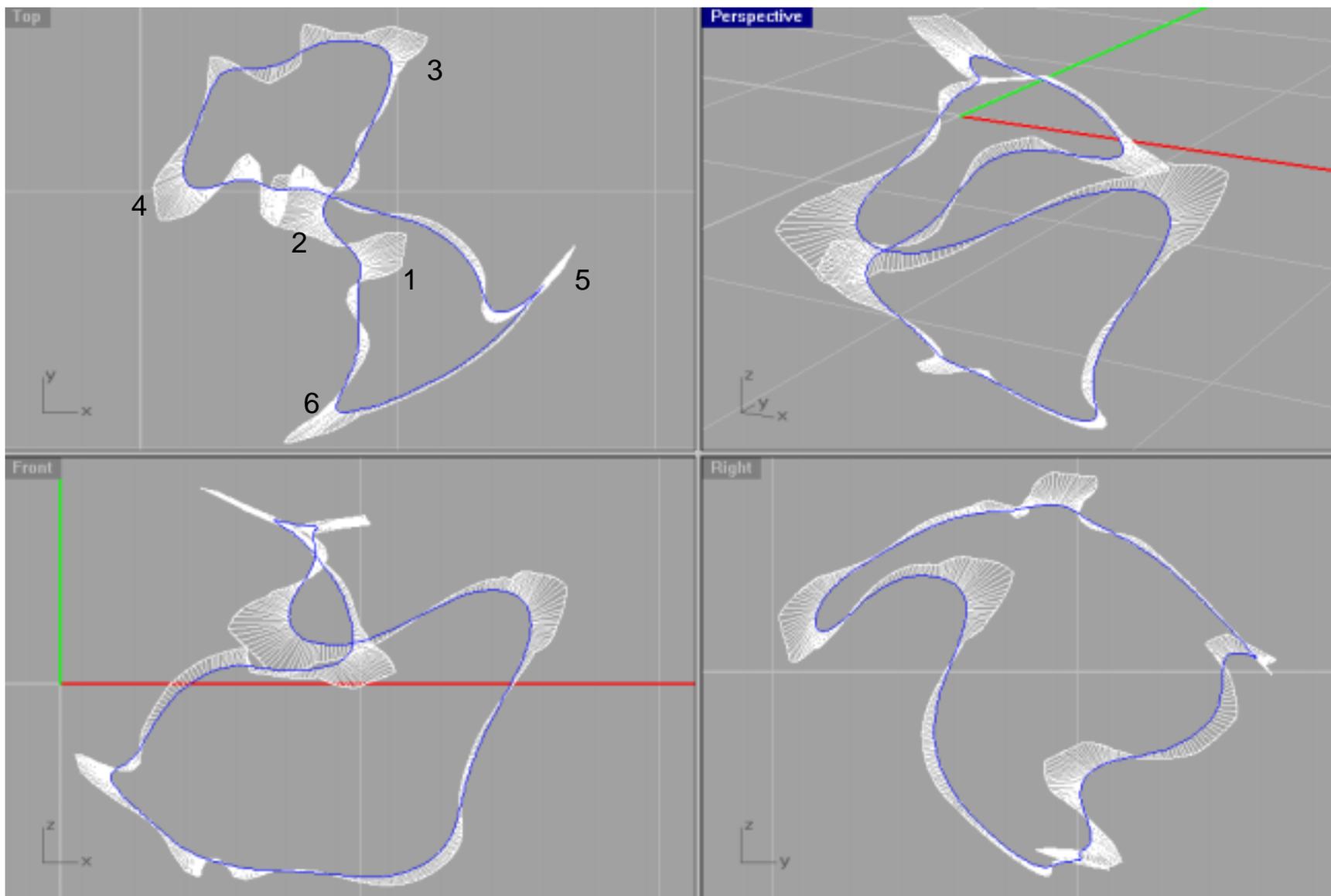
Strickler: Min rad = 9.4-cm



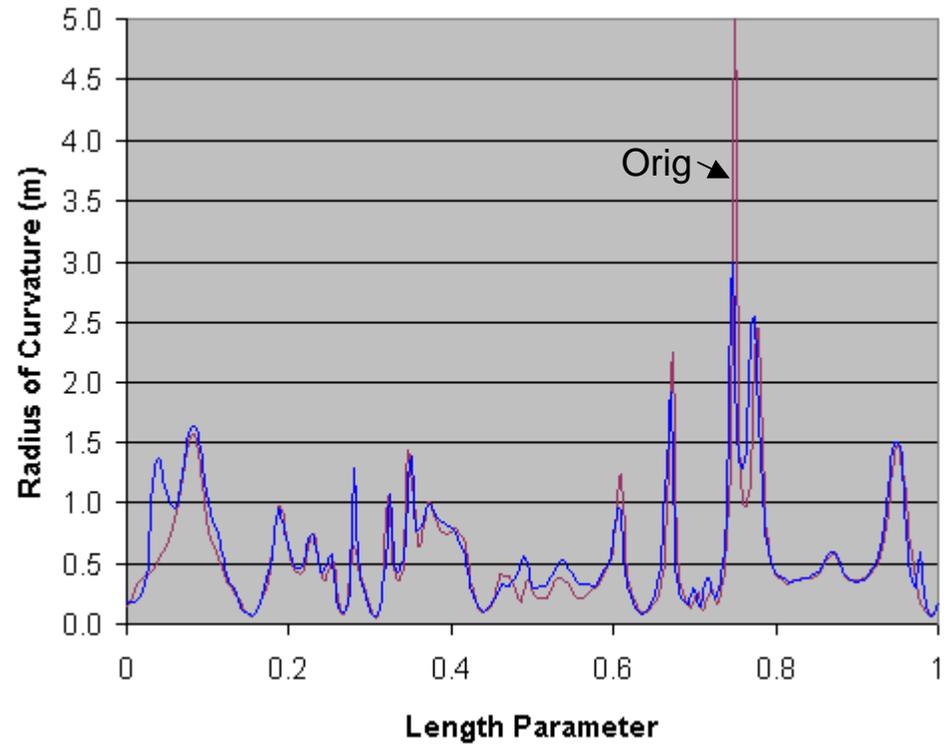
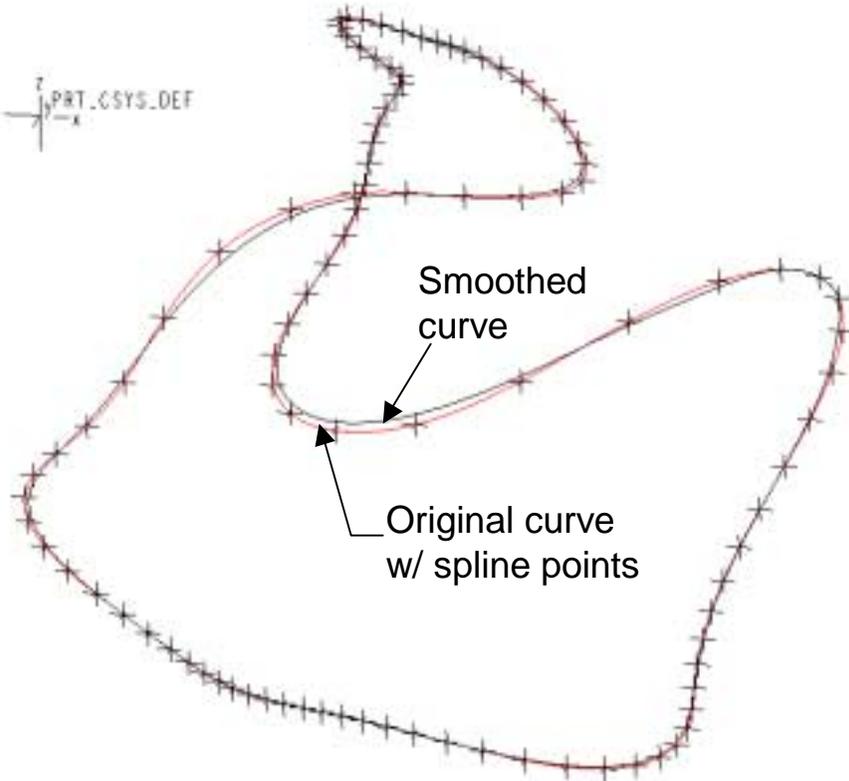
ProE model of winding centers



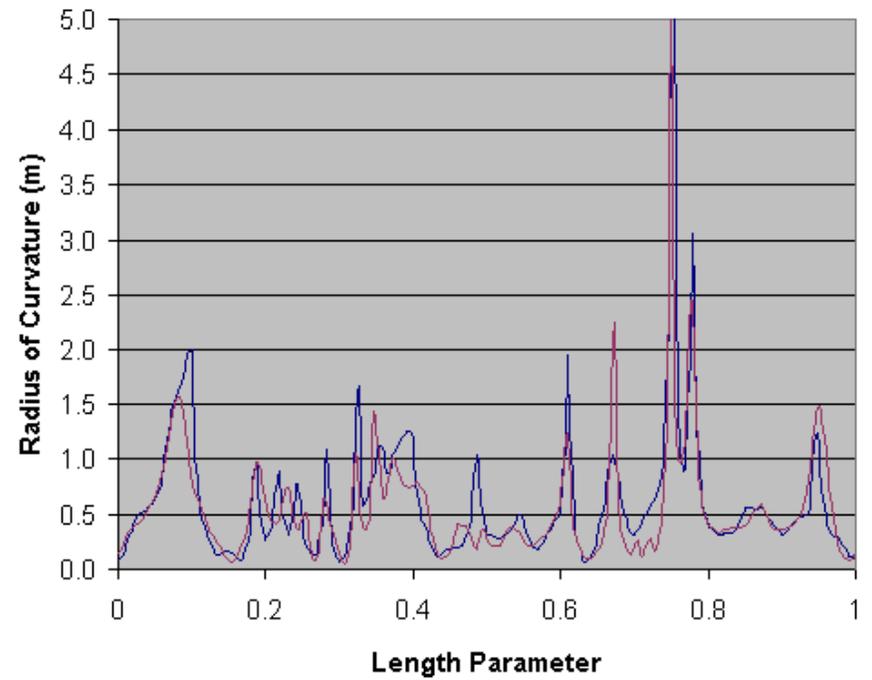
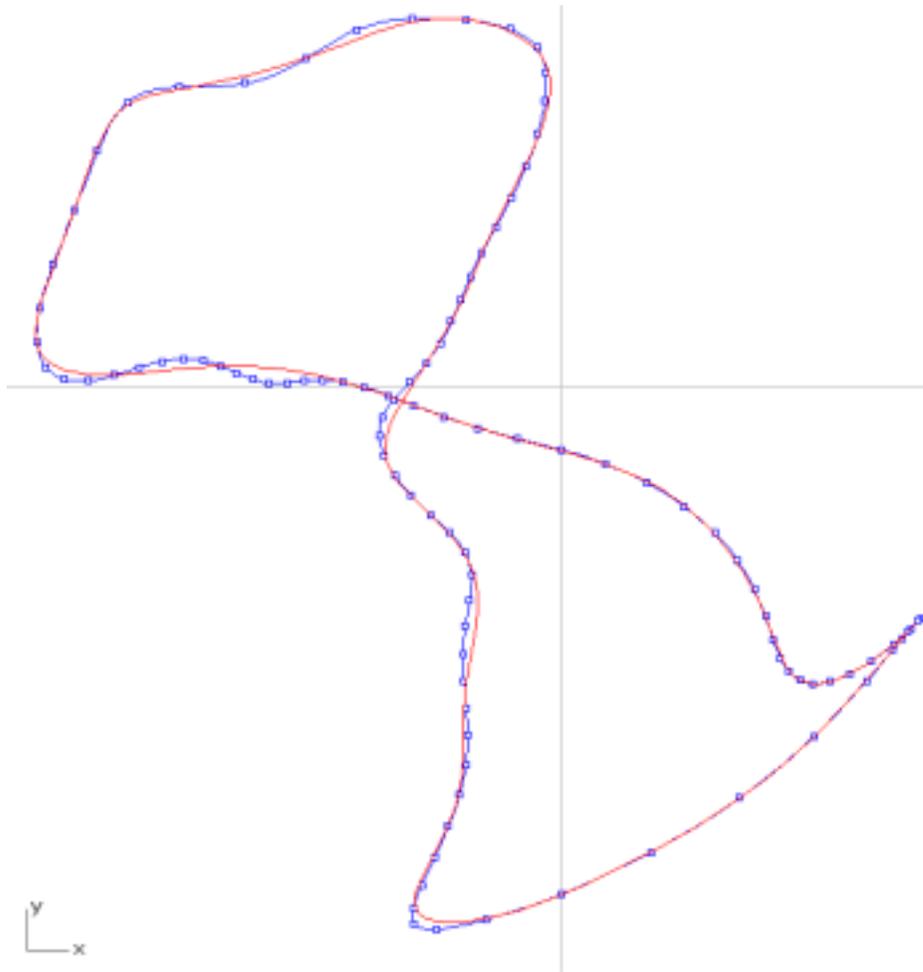
Radius < 10-cm occurs in six places for Coil #1



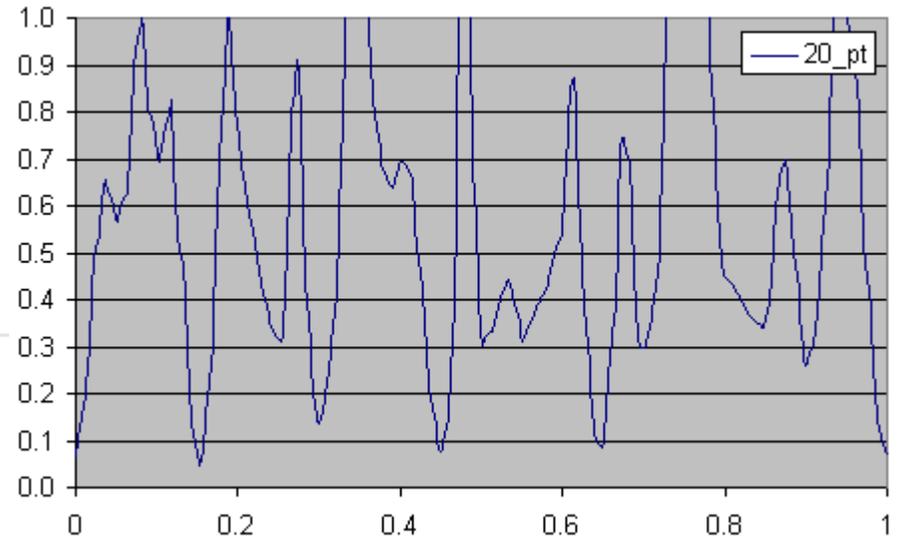
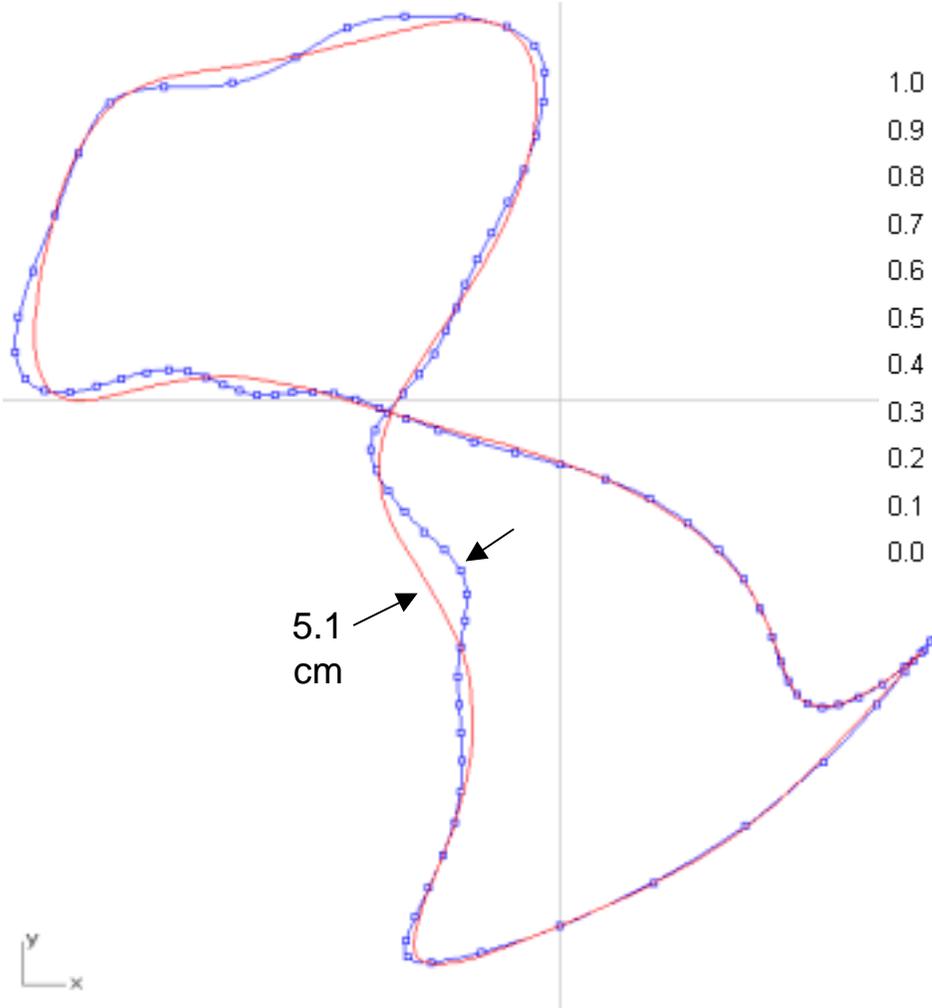
Pro/ENGINEER spline smoothing (3-point)



Curve reparameterization (30 points)



Curve reparameterization (20 points)



Summary:

Global and local smoothing has been attempted in ProE, Rhino3D

For case M12, local curvature changes are tedious.

Curve reparameterization method is faster and removes small wiggles, but also can result in larger deviation from original winding center.

20-pt curves have been prepared for physics evaluation.