962-N1-387 **James R. King*** (king@math.washington.edu), University of Washington, Dept of Mathematics, Box 354350, Seattle, WA 98195-4350. *Approaching affine geometry concepts with dynamic software: invariance, concurrence, area theorems, barycentric coordinates and splines.* Preliminary report.

The spaces of affine geometry can be identified with the spaces of Euclidean geometry, but ignoring angle and distance measure. From another point of view, affine geometry is vector geometry without a chosen origin. Affine geometry was defined and studied by Moebius in the first half of the nineteenth century. The objects of plane affine geometry include points, lines, and conics. Its invariants include ratios on a line and ratios of oriented areas. Recognizing affine invariance in theorems of elementary geometry about midpoints and parallels casts them in a new light. A theorem such as the Marion Walters theorem about ratios of areas in a triangle becomes a theorem about affine invariance and symmetry. Moebius invented barycentric coordinates to study this geometry; his geometric interpretation of these coordinates is now used for the splines of computer graphics and for fractal patterns in Pascal's triangle. In this talk, it will be demonstrated how dynamic geometry software can make visible and interactive this rich set of geometric relationships, from the Archimedes principle of the lever and centers of mass to Ceva's Theorem, Bezier curves, and areas of partitions of a triangle. (Received September 13, 2000)