1021-51-66 **Benjamin J Howard*** (bhoward@ima.umn.edu), I.M.A., University of Minnesota, Minneapolis, MN 55455, **Chris Manon** (manonc@math.umd.edu), Mathematics Dept., University of Maryland, College Park, MD 20742, and **John Millson** (jjm@math.umd.edu), Mathematics Dept., University of Maryland, College Park, MD 20742. *The toric geometry of triangulated polygons in Euclidean space.*

We give an elementary geometric description of the toric fibers of various toric degenerations of the Grassmannian $Gr_2(\mathbb{C}^n)$ and of the moduli spaces of n-gon linkages in $\mathbb{R}^3$. We describe the action of the compact part of the torus both in terms of Euclidean geometry and in terms of Hamiltonian actions on stratified symplectic spaces.

These toric degenerations were described in the setting of combinatorial commutative algebra by Speyer and Sturmfels in "The tropical Grassmannian". There is a degeneration for each trivalent tree with n leaves. Our geometric description was motivated by the construction of the toric degenerations of $SU(2)$–character varieties of fundamental groups of surfaces given by Hurtubise and Jeffrey. We tie together the commutative algebra description and the geometric description with a generalized form (R. Sjamaar) of the Kirwan-Kempf-Ness theorem. (Received August 19, 2006)