1154-G5-2130 **Michael A. Brilleslyper*** (mike.brilleslyper@usafa.edu). *Visual Explorations for a 1-Parameter Family of Harmonic Trinomials.* Preliminary report.

Let n and k be integers with $1 \leq k \leq n-1$, and let c be real with $0 < c \leq 2$. Consider the family of harmonic trinomials $p_c(z) = z^n + c\bar{z}^k - 1$. Unlike analytic trinomials, $p_c(z)$ can have more than n zeros. For fixed values of n and k, we explore how the number of zeros varies with c. Using different visualizations on Mathematica, it is possible to obtain a conceptual understanding of why there is a discrete set of c-values at which new zeros are "born." We introduce the critical circle, which separates the orientation preserving and reversing regions for $p_c(z)$ and show how it plays a fundamental role in finding the discrete set of c-values. Along the way, we will visit intersections of level curves, winding numbers, and even hypocycloids! (Received September 17, 2019)