

1077-97-1879      **Patrick Callahan\*** ([callahan.web@gmail.com](mailto:callahan.web@gmail.com)), 823 H Avenue, Coronado, CA 92118.

*Transforming geometry through transformations.*

Traditional approaches to geometry have focused on memorizing lists of names of shapes and theorems. The list of names and “facts” in elementary grades and “theorems” in secondary often seem to be rather ad hoc. Felix Klein gave a unifying approach to geometry in his 1872 Erlangen Program. At the heart of this approach is that geometry is characterized by symmetries or geometric transformations. Geometric transformations are not a new approach to geometry, but they have received very little attention in most K-12 mathematics curricula. The CCSS have put geometric transformations back into the forefront of K-12 geometry. This is a change from previous state standards and has been identified as one of the priority needs for professional development. I will share data from recent research on students’ and teachers’ understanding of transformations, including work from our NSF funded project “Learning and Teaching Geometry”. The mathematics will center on middle school but look at implications of a transformational approach to geometry at both the high school and elementary levels. (Received September 21, 2011)