

1135-11-1173      **Edward B. Burger\*** ([burger@southwestern.edu](mailto:burger@southwestern.edu)), Office of the President, P.O. Box 770,  
Southwestern University, Georgetown, TX 78627. *Applications of Orthogonality within  
Non-Archimedean and Human Contexts.*

Here we offer a brief overview of J.D. Vaaler's well-known work on Siegel's Lemma and his work on orthogonal projections over non-Archimedean spaces. We describe how orthogonality, together with the geometry of numbers over the Adele space, established the existence of a primitive basis version of Siegel's Lemma over an arbitrary number field. This result generalized and extended work of K. Mahler, A. Schinzel, and H. Weyl. We conclude with some reflections and observations on orthogonality within our mathematical culture and how it can lead to improved results. (Received September 20, 2017)