Donald Spector* (spector@hws.edu), Department of Physics, Hobart and William Smith Colleges, Geneva, NY 14850. Images Produced via Modular Multiplicative Inverses.

In recent work, I explored the use of modular multiplication to modify musical themes and create new harmonic structures. Here, I take the same basic methodology and apply it visual art, manipulating images with rules based on pairing colors corresponding to inverses with respect to multiplication modulo a prime number. By selecting the number of subdivisions into which the gray scale or various individual color scales (e.g., R, G, and B, or C, M, Y, and K), one can employ different modular groups, obtaining different visual effects; the most compelling images arise from groups whose order is neither too small nor too large. Working interactively with this method allows an exploration of a range of possible images, which provides some insight into the structure of the relevant multiplicative groups as one examines a variety of aesthetic outcomes. (Received September 25, 2018)