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Bryna Kra* (kra@math.northwestern.edu), Department of Mathematics, Northwestern University, 2033 Sherida Road, Evanston, IL 60208. *From combinatorics to ergodic theory and back.*

A beautiful result in additive combinatorics is Szemerédi's Theorem: a set of integers with positive upper density contains arbitrarily long arithmetic progressions. In the 1970s, Furstenberg established the deep connections between combinatorics and ergodic theory, using ergodic theory to prove Szemerédi's Theorem. This development led to the field of Ergodic Ramsey Theory and many new combinatorial and number theoretic statements have been proven using ergodic theory. I will give an overview of this interplay, with a focus on recent developments in ergodic theory. (Received August 29, 2006)