Brian P Foley* (bfoley17@wooster.edu), 1506 Arthur Dr., Wooster, OH 44691, and Michael A Bush. Using a Set of Monotonically Reducing Moves to Solve the Unknotting Problem. Preliminary report.

The three basic Reidemeister Moves have been proven to be the only moves necessary to demonstrate knot equivalence. We propose a set of four generalized moves which demonstrate the equivalence of one knot projection to another projection with an equal or lesser number of crossings. We prove this using a similar strategy to the original Reidemeister proof. Applied inductively, we assert that these four moves are able to monotonically reduce a knot to its minimal crossing projection. The algorithm which applies these moves should thus solve the Unknotting Problem. We also discuss the feasibility and current progress of our computer program written to apply these moves in polynomial time. (Received September 19, 2015)