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Sarah Friday*, 1001 E University Ave, Georgetown, TX 78626, and **Jordan Smith, Aaron Waclawczyk** and **Fumiko Futamura**. *Diagonalizing the Undiagonalizable*.

Calculating powers of a defective matrix can be considerably difficult for arbitrarily large matrices. It was recently shown that for any defective matrix there exists an l-lift which embeds the matrix inside a larger, diagonalizable matrix, whose powers are easily calculable. This particular lifting, however, uses Lidskii's theorem to create the diagonalization which consequently perturbs the eigenvalues. Furthermore, the lifting does not allow for powers of the original matrix to be extracted from powers of the lifted matrix. We show an alternate way of lifting a defective matrix using some of its generalized eigenvectors such that the lifted matrix retains the eigenvalues of the original and also allows for one to extract the powers of the original from the powers of the lifted matrix. (Received September 17, 2019)