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Jonathan Ramalheira-Tsu* (jramalheiratsu@math.arizona.edu), Department of Mathematics, University of Arizona, 617 N. Santa Rita Ave., Tucson, AZ 85721-0089, and **Nicholas M Ercolani**. *Combinatorial Dynamics: From Patience Sorting to the Discrete-Time Toda Lattice*.

Tropicalisation provides a mechanism for relating combinatorial/algorithmic processes to dynamic/integrable ones, often of a stochastic character. One of the classical examples of this was the algorithmic (in terms of "patience sorting") determination of the asymptotic expected value of the longest increasing sequence in a permutation which is related to a Poissonised process that can be effectively analysed by integrable methods of Riemann-Hilbert analysis. However, in this example, the nature of the underlying dynamics is somewhat obscured. A model of great current interest (which in fact generalises the patience sorting example) starts with the Robinson-Schensted-Knuth (RSK) algorithm and relates it by a "tropical" correspondence to the dynamics of the discrete Toda lattice. The novelty of our approach is to provide deeper insight into all this in terms of factorisations of one-dimensional discrete Schrödinger-type operators and related Bäcklund transformations. (Received September 16, 2019)