1135-A0-157 **William Cook***, University of Waterloo, Waterloo, ON. *Information, computation, optimization: connecting the dots in the t= raveling salesman problem.*

Few math models scream impossible as loudly as the traveling sale= sman problem. Given n cities, the TSP asks for the shortest route to take you to all of= them. Easy to state, but if $\mathcal{P} \neq \mathcal{NP}$ then no solution method can= have good asymptotic performance as n goes off to infinity. The popular interpretation is that we simply cannot solve realistic example= s. But this skips over nearly 70 years of intense mathematical study. Indeed, in 1949 Julia Robinson described the TSP challenge in practical ter= ms: "Since there are only a finite number of paths to consider, the proble= m consists in finding a method for picking out the optimal path when n is= moderately large, say n =3D 50." She went on to propose a linear programming attack that was adopted by her = RAND colleagues Dantzig, Fulkerson, and Johnson several years later.

Following in the footsteps of these giants, we use linear programming to sh= ow that a certain tour of 49,603 historic sites in the US is shortest possi= ble, measuring distance with point-to-point walking routes obtained from Go= ogle Maps. We highlight aspects of the modern study of polyhedral combinatorics and di= screte optimization that make the computation feasible. (Received August 05, 2017)