R. Tyrrell Rockafellar (rtr@math.washington.edu), Department of Mathematics, University of Washington, *Feedback and Cost-to-Go in Control Problems of Convex Type*

A connection between optimal feedback and the cost-to-go function in problems of optimal control has long been recognized, but efforts at putting this into practice have largely been limited to the classical case of linear-quadratic control with no state or control constraints. Recent developments reveal that, for a much broader class of control models exhibiting convexity in states and controls, unusually favorable properties are likewise present which well might be put to use. Such properties come out of the analysis of the subgradient mapping for the cost-to-go function and various Hamiltonian characterizations of the way it evolves. In principle, they support nonlinear global feedback rules which allow not only for constraints but also for penalty expressions that may be just piecewise smooth.