1003-34-755 **John Harnad*** (`harnad@crm.umontreal.ca`), Centre de recherches mathmatiques, Universit de Montral, C. P. 6128, Succ. "centre-ville", Montreal, Quebec H3C 1H7, Canada. *Hamilton-Jacobi theory, phase space separation of variables and classical R-matrix theory.*

An overview will be given of developments of the past 20 years concerning completely integrable Hamiltonian systems admitting a matrix Lax pair (isospectral) representation, and their integration in terms of abelian functions. It will be explained how these may be viewed in terms of separation of variables in Hamilton-Jacobi theory, within the phase space setting provided by the classical R-matrix structure on loop algebras and loop groups. Extensions to nonautonomous Hamiltonian systems underlying isomonodromic deformations of rational covariant derivative operators on the Riemann sphere will also be discussed. (Received September 29, 2004)