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Léon Rosenfeld's general theory of constrained Hamiltonian dynamics DONALD SALISBURY, Austin College — Léon Rosenfeld published in *Annalen der Physik* in 1930 a groundbreaking paper showing how to construct a Hamiltonian formalism for Lagrangian theories which admitted an underlying local gauge symmetry. The theory included both "internal" transformations such as the U(1) symmetry group of electromagnetism, and "external" symmetries typified by Einstein's general theory of relativity. His comprehensive analysis predated by two decades the formalism known as the Dirac-Bergmann approach, and I will present evidence that each of these giants were to some extent influenced by Rosenfeld's theory. Of particular significance is Rosenfeld's incorporation of arbitrary functions into the phase space generator of temporal evolution, and his construction of the phase space generator of symmetry transformations. The existing Hamiltonian formalisms have of course played a central role both in the demonstration of the renormalizability of Yang-Mills theories and current efforts in constructing a quantum theory of gravity.

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