1020-14-260 **Yasuyuki Kachi*** (kachi@math.ku.edu), Snow Hall, 1460 Jayhawk Boulevard, Lawrence, KS 66045-7523. *Birational Equivalence, Linear Systems, and Desingularization.*

I introduce an object Spv X which represents the birational equivalence class of an algebraic variety X and which admits a morphism to X. Spv X is a functor that mimics the usual Hom (Spec (*), X) : (Ring) $\longrightarrow$ (Set). Namely, I define Spv X as Hom (Spec $HVR_n(*)$, X), using some universal coefficient ring $HVR_n(*)$. I also define the completion Spv $^\wedge X$, using linear systems, which turns out to coincide with the categorical limit of proper varieties birational to X. In the course it arises a group functor SG_n which is a uniform analog of GL_n and which reflects a composition algorithm of blow-ups. I show that Cutkosky's factorization of birational correspondence is interpreted precisely as the transitivity of the action of $SG_n(k)$ on "the classifying space" $\mathcal{S}_n(k)$ consisting of regular local subrings of $HVR_n(k)$. I show that Kronecker's principle, that (roughly speaking) dictates how the regular local subrings are immersed in $HVR_n(k)$, reproduces the feasibility of local desingularization, in an arbitrary characteristic, with a note that Kronecker's principle fails for "the complete analog" of $HVR_n(k)$ in $k((t_n))((...))((t_1))$. (Received August 29, 2006)