WHO SAYS DROMAEOSAURS COULDN'T FLY?

PAUL, Gregory S., 3109 N. Calvert St., Baltimore, MD.

Conventional but obsolete phylogenetics continue to place the most bird-like avepod theropods basal to the *Archaeopteryx*-modern bird clade, even though Cretaceous dromaeosaurs, troodonts, oviraptorosaurs and therizinosaurs had advanced flight-related characters absent in *Archaeopteryx*, and became less avian as they evolved; classic indicators of loss of flight more advanced than that of the Ürvogel. Obvious flight adaptations (oversized sternal plates, folding arms, pterosaur or bird-like tails) are usually explained away as exaptations, and pennaceous feathers are supposed to have evolved before flight. The discovery of sinornithosaurs (= microraptors and cryptovolians) with fully developed arm plus leg wings verifies that basal dromaeosaurs were aerial as the neoflightless hypothesis predicts. Presented as glider protofliers, in all regards sinornithosaurs were either as flight adapted as *Archaeopteryx*, or more so (much larger sternum, ossified sternal ribs and uncinates, strongly bowed outer metacarpal and flattened central finger that anchored outer primaries that were longer relative to the hand, alula feathers, swept back distal pubis which streamlined the body).

Sinornithosaur flight performance was intermediate to *Archaeopteryx* and *Jeholornis*. A similarly intermediate phylogenetic position probably applies to long tailed dromaeosaurs and troodonts, short-tailed oviraptorosaurs were close to or a little more derived than *Confuciusornis*. Large heads bearing serrated bladed teeth, raptorial fingers and sickle claws indicate sinornithosaurs were arch predators. Spherical femoral heads allowed the hindwing to be held horizontal, it could not strongly flap and may have been folded during normal powered flight, being deployed for soaring and/or for extra lift and drag during final approach to prey. Whether dromaeosaur hindwings were the basal avian condition or an independent adaptation is unclear, the dromaeosaur-like jeholornid tail suggests that pterosaur-like tails were the basal avian norm.