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The Different Flight Positions of a Red-Tailed Hawk

Objective:

Alter a blobby man animation in VPython into a hawk.

Background:

Contrary to land-bound animals, birds move their limbs in a synchronized movement. Their wings, which can be similar to a human arm in shape, must move fluidly in order to create enough downward force to cause lift. A blobby man on the basis of connecting a leg and an arm together I movement, showcasing how humans walk/run. Birds, on the other hand, have their legs synched together to increase prey capture, lift off, and decrease drag while their wings must be synched to create uniformity in the downward force. The tail feathers must move relatively independently of the other limbs in order to control direction and falling speed. If a hawk is soaring, its tail feathers would only be partially splayed in order to allow changes in position while also creating more surface area; when diving the tails is narrowed as far as possible to reduce drag. Landing and taking flight is complicated since the three sets of limbs do not necessarily work in the same direction as it is while flying. In these cases, the legs act as an initial starter as the wings expend a lot of energy to create lift and the tail as a parachute of sorts to help lift the bird.

Goals:

While my basis of programming knowledge is minimal, I desire to create an animation of a hawk taking flight off of a perch, gliding for a short period of time, diving, and finally landing back on a perch. Based upon a red-tailed hawk, the tail would have to layers of feathers (one tawny and the other red). Wings would have primary and secondary feathers; in order to simplify the wings, the primary and secondary pairs would move identically with each pair of feathers working as a wave from the center mass. Minimal movements would occur while soaring and diving, the animation only shifting initially with the wing position change and feather twitching to mimic the real-time alterations of a hawk. The animation will loop with a couple second delay between landing and taking flight to show the bird resting.