

Precision limb landing in complex arboreal topologies as a pre-adaptation for complex symbolic communication systems.

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Humans perceive, manipulate, modify, and create numerous complex objects as a part of everyday life. Our evolved analytical perception capacities for identification of complex shapes and classification of objects enable us to use tools and communicate symbolically. The abundance of diverse tools in our environment has even been suggested as underlying the many parts of speech and prepositions that comprise our complex grammar. Recently, researchers have theorized that complex tool use may have emerged in recently terrestrialized primates who have re-purposed anatomy evolved for handling arboreal supports. Studies of complex tool use and symbolic culture are now being extended to observations of non-human Anthropoids. I hypothesize that our sophisticated symbolic communications have cognitive roots in the early Cenozoic when survival of emerging primates depended upon rapid recognition of complex branch shapes during locomotion involving precision limb landing. Leaping and arboreality substantially reduced the effectiveness of olfactory signaling, however, and may have additionally necessitated an increase in the complexity of vocal communication. Inspection of the vocalizations of leaping and brachiating primates suggests complex vocal gestures could have initially evolved as signals of visual acuity – an ancient relationship which may underlie the strong overlap between auditory and visual language systems in humans.