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Kolloquiumsreihe

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The Evolution of Language: Cognitive Phylogenetics and the Comparative Approach

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After centuries of speculation, and decades of unresolved debate regarding fossil hominids, the scientific study of language evolution has recently received a powerful boost from two new types of data: comparative and genetic. Comparative data from a wide variety of nonhuman animals allows us to uncover "cognitive phylogenies" for different mechanisms of language. Studying homology, we can pinpoint the origin of broadly shared traits in the vertebrate family tree, and estimate when they evolved. Studying analogy, we can locate cases in which similar traits have evolved independently, in separate clades like primates and birds. Such examples of convergent evolution allow us to test hypotheses about adaptive function and mechanistic prerequisites, and thus go beyond asking "when?" to ask "why?" certain traits evolved. I will illustrate these comparative principles with mechanisms involved in human spoken language, such as vocal imitation and the descended larynx. The second "new wave" of data comes from genes involved in speech, such as FOXP2, or phonological processing, such as ROBO1 and DCDC2. Such genes affect neural development, and provide a window into the computational mechanisms involved in language. Again, comparative data play a crucial role in helping us to understand the functional roles of such genes. Furthermore, variation in and around such language-related genes can be used to estimate the time during which unique human variants swept through an ancestral population, and thus to roughly date the origin of particular cognitive mechanisms. I show how three leading models of language evolution can be tested using this approach, which might be dubbed "cognitive archaeology". Based on this two powerful new sources of empirical data, I suggest that the time is ripe for fundamental progress in understanding the evolution of human language, and human cognition more generally.