

Vincent M. Janik

Vocal communication and cognition in cetaceans

Cetaceans have developed extraordinary skills in the acoustic and cognitive domains. All cetaceans are capable of vocal learning and vocal invention which allows them to expand their repertoires throughout their lifetimes. Whales produce elaborate songs that change over time as part of a cultural transmission system. Dolphins use individually distinctive labels that are copied by others. They also understand the human pointing gesture and can use artificial signals to report the presence or absence of objects. These are but a few examples of skills that often rival or even exceed those found in nonhuman primates. It is surprising that these skills have evolved in an environment that has little in common with the one early humans would have found themselves in. Cetaceans are thus excellent for comparative studies to assess the uniqueness and the evolution of complex cognitive and communication skills. Our current knowledge suggests that obstacles to group cohesion in the marine environment have favoured the evolution of a complex acoustic communication system in these highly social mammals. The absence of advanced manipulative skills in cetaceans favours the social brain hypothesis and demonstrates the importance of social selection in the evolution of cognition and communication. This chapter will provide an overview of communication and cognition skills in cetaceans, compare them to those found in other animals and humans, and introduce the most likely contexts for their evolution.