Vincent M. Janik, Ph.D.

Reader in Biology

University of St. Andrews

Born in 1966 in Berlin

Studied Biology at the Freie Universität Berlin and the

University of St Andrews

FOCUS

PROJECT

Reference and Vocal Learning in Animal Communication

The complexity of a communication system is influenced by the combination of underlying features that define it. Vocal learning and assigning referential meaning to signals have been identified as two such features that were crucial in the evolution of human language. In animals, we can find each of these features in separate species, but only few animals are capable of both. These are primates, delphinids and parrots. My project will focus on these animals. I will 1) revise and expand the existing theoretical framework for the study of reference in animal communication, 2) review the evidence for reference in the animal communication literature, 3) study the implications of the combination of reference and vocal learning in animal communication, 4) analyse our existing data on signal usage in animals for evidence for referentiality and 5) summarise methodological issues in the study of acoustic communication in animals. The project will be carried out in collaboration with Dr. Zuberbühler who will focus on intentionality. It will require a workshop on reference in animal communication that will bring philosophers, psychologists and biologists together to discuss definitions and evidence for reference and intentionality in animal signals. I will also continue to work with my students on the analysis of our dolphin communication data, which are directly relevant for this topic. The results will be summarized in a publication on complexity in animal communication.

Recommended Reading

Janik, V. M. 2000. "Whistle matching in wild bottlenose dolphins (Tursiops truncatus)." Science 289: 1355-1357.

Janik, V. M. and P. J. B. Slater. 2000. "The different roles of social learning in vocal communication." Animal Behaviour 60: 1-11

Janik, V. M., L. S. Sayigh, and R. S. Wells. 2006. "Signature whistle contour shape conveys identity information to bottlenose dolphins." Proceedings of the National Academy of Sciences of the USA 103: 8293-8297.

COLLOQUIUM, 02.02.2010

rom Psychophysiology to Animal Communication: The Role of Basic Mechanisms in Mammalian Assessments of Sounds

Studies on great apes, dolphins, seals, elephants and other mammals with complex social and communication systems have highlighted their impressive skills to navigate their social environment. Memory, individual

recognition, concept formation, vocal learning, theory of mind and deception are but a few of the skills that the cognitive sciences have focused on. However, to understand a communication system one has to investigate both ends of the continuum between advanced skills and basic mechanisms that it is built on. Only then will we be able to recognize the potential as well as the constraints of such systems and understand why our scientific predictions might not always be met. Nevertheless, few studies on the so-called charismatic megafauna have investigated the influence of the basic mechanisms on communication abilities.

I will start my presentation by describing how the focus on either advanced or basic mechanisms has influenced how scientists study animal communication. I will then look at phylogenetically old mechanisms that influence how mammals react to sounds. Most of these have been studied in humans and rodents with a focus on understanding their neurophysiology. I will review what sound parameters make a sound pleasant or unpleasant to humans and other mammals to explore possible universals in our sound perception. In the second half of my presentation I will describe our latest findings on one of the basic mechanisms for sound assessment that can be found in all mammals, the acoustic startle reflex. We have found that the startle reflex has a much longer lasting influence on the behaviour of an individual than previously assumed. I will discuss the adaptiveness of the startle reflex and show how it is exploited by vocalizing mammals to modify the behaviour of social partners. I will conclude by suggesting that the startle reflex is involved in the induction of long-term stress as well as other detrimental long-term responses to noise pollution.

PUBLICATIONS FROM THE FELLOW LIBRARY

Janik, Vincent M. (2015)

Come dine with me : food-associated social signalling in wild bottlenose dolphins (Tursiops truncatus)

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1048660028

Janik, Vincent M. (2014)

Signature whistles in free-ranging populations of Indo-Pacific bottlenose dolphins, Tursiops aduncus

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1048643212

Janik, Vincent M. (2013)

Clicking in shallow rivers : short-range echolocation of Irrawaddy and Ganges River dolphins in a shallow, acoustically complex habitat

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=104864586X

Janik, Vincent M. (2013)

Bottlenose dolphins can use learned vocal labels to address each other

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1048644375

Janik, Vincent M. (London,2013)

Vocal copying of individually distinctive signature whistles in bottlenose dolphins

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1043657835

Janik, Vincent M. ([Inverness],2012)

Site condition monitoring of bottlenose dolphins within the Moray Firth Special Area of Conservation: 2008 - 2010

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1687334323

Janik, Vincent M. (2012)

Whistle vocalizations of Indo-Pacific bottlenose dolphins (Tursiops aduncus) inhabiting the south-west Indian Ocean

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1046044834

Janik, Vincent M. (2012)

Identifying signature whistles from recordings of groups of unrestrained bottlenose dolphins (Tursiops truncatus)

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=104373287X

Janik, Vincent M. (2011)

Repeated elicitation of the acoustic startle reflex leads to sensitisation in subsequent avoidance behaviour and induces fear conditioning

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1046040510

Janik, Vincent M. (Cambridge,2010)

Aversiveness of sounds in phocid seals : psycho-physiological factors, learning processes and motivation

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=757444024