SCIENCES & BIOENGINEERING SCIENCES

The Research Group
Artificial Intelligence Lab

has the honor to invite you to the public defence of the PhD thesis of

Koen de Reus

to obtain the degree of Doctor of Sciences

Joint PhD with Radboud Universiteit, Nijmegen

Vocal communication in harbour seal pups: Implications for language evolution

Supervisors:
Prof. dr. Bart de Boer (VUB)
Prof. dr. Judith Holler (Radboud Universiteit, Nijmegen/Max Planck Instituut voor Psycholinguïstiek, NL)

The defence will take place on

Friday, February 20, 2026 at 10.30 p.m. at the Aula of Radboud University (Comeniuslaan, 2)

The defence can also be followed through a live stream: https://www.ru.nl/over-ons/diensten-faciliteiten/vm/aula/livestream/livestream-academiezaal/

Members of the jury

Prof. dr. Asli Özyürek (Max Planck Instituut voor Psycholinguïstiek/Radboud Universiteit, Nijmegen NL, chair)
Prof. dr. Paul van Eecke (VUB, secretary)
Prof. dr. Elisa Gonzalez Boix (VUB)
Dr. Wim Pouw (RU, NL)
Prof. dr. Sylvie Nozaradan (UC Louvain)
Prof. dr. Sonja Vernes (University of St. Andrews, UK)

Curriculum vitae

Koen de Reus was born in Emmen, the Netherlands, in 1995. In 2016, he obtained a bachelor's degree in Liberal Arts and Sciences from University College Roosevelt in Middelburg, the Netherlands, majoring in Biology, Psychology, and Cognitive Science, with a minor in Statistics. In 2017, he completed a master's degree in Wild Animal Biology at the Royal Veterinary College in London, United Kingdom. His master's thesis was conducted at Sealcentre Pieterburen, where he studied vocal development in Eastern Atlantic harbour seal pups. In the following years, he worked part-time as a tutor in the Life Sciences Department of Erasmus University College in Rotterdam, the Netherlands, while continuing research related to his master's project. In September 2020, he started a joint PhD position with the Artificial Intelligence Lab of the Vrije Universiteit Brussel and the Donders Centre for Cognition. For the duration of this project, he was hosted by the Comparative Bioacoustics group at the Max Planck Institute for Psycholinguistics. He is currently working as a lecturer in the Life Sciences Department of Erasmus University College.

Abstract of the PhD research

How and why did language evolve in humans? Can we learn from studying communication in other animals? Language is a uniquely effective and powerful tool to interact with others and is often considered to be what sets us apart from the rest of the animal kingdom. Despite this, many species have also evolved elaborate communication systems, some of which even show features found in human language. The discovery in the 1980s that harbour seals can imitate human speech promised a new comparative model for language evolution studies. However, we currently miss a comprehensive understanding of the features shared between human language and harbour seal communication to enable effective cross-species comparisons. This thesis provides a long-awaited, interdisciplinary account of some vocal communication features in harbour seals, including vocal flexibility, vocal development, social accommodation, and turn-taking. All the empirical studies in this thesis were performed using non-invasive methods from bioacoustics (audio recordings and a playback experiment) and morphometrics (anatomical measurements). Additionally, this thesis contributes a qualitative cross-species review on the rhythmic patterns observed in social interactions between animal dyads of several mammals, birds, anurans, and insects. Taken together, my findings show that harbour seal communication shares features with that of other species and human language, reinforcing its value as a comparative model for language evolution research. Finally, this work demonstrates how the comparative approach can be applied to communicative behaviours to shed light on the biological and social factors driving their evolution.