Communication is Communication: Parallels Between Nonhuman and Human Animal Communication

Chair: **Chris Sturdy**, University of Alberta

Human communication researchers often overlook nonhuman animal communication as making useful contributions to our understanding of human communication, or, at the very least, to not treat the two as related, much less equivalent, sharing common mechanisms. In fact, talks in this symposium, and the related discussion, are aimed at changing this perception. (If it needs changing! If you are among the converted - welcome!) Here we have talks with taxa from insects to mammals, including humans, to birds, serving as the subjects of our experiments. You will see common themes, and in some cases, direct comparisons. In these comparative studies, commonalities and differences are obvious and striking. Please make yourself comfortable and enjoy the symposium. All animals are welcome.

All we need is operant conditioning

Chris Sturdy and **Elena Nicoladis**, University of Alberta

Songbirds are often used as a model system for understanding human speech acquisition. Both songbirds and humans used feedback from an adult of the species, learn during a critical period, and have dedicated brain areas devoted to vocal learning, perception, and production. We make the case that operant conditioning can effectively, and parsimoniously, be used to explain both human speech learning and songbird song learning. Operant conditioning might not operate in or explain all situations and phenomena, but serves as a parsimonious and uniting mechanism to explain vocal learning across diverse taxonomic groups.

Emotional perception in humans and birds

Jenna Congdon, University of Alberta

Humans and black-capped chickadees are both vocal learners and may have similar abilities. Evidence for acoustic universals (i.e., vocalizations indicating state of arousal) was recently demonstrated in humans as they can identify arousal in vocalizations produced by multiple species across three classes: Amphibia, Reptilia, and Mammalia (Filippi et al., 2017). In this study, stimuli included conspecific and heterospecific vocalizations from nine animal groups: frogs, alligators, ravens, elephants, pandas, pigs, macaques, chickadees, and humans. Our results indicate that both humans and chickadees can discriminate between vocalizations of high and low arousal on similar operant discrimination go/no-go tasks. This evidence that both humans and birds perceive emotional content in vocalizations produced by multiple species provides additional support for acoustic universals.

What can squirrel communication tell us about language?

Shannon Digweed, MacEwan University

A key feature of human language is its referential system; the ability of words to refer to specific events or objects. When exploring the relationship between human language and animal communication researchers have historically focused on potential referential systems across species. I will explore the extent to which tree squirrels communicate within a referential based system across several domains, antipredator communication and communication regarding territory ownership. Moreover, if these signals are referential, do they convey the same kind of 'information' that language does? I will complete this exploration into squirrel communication with the concept of 'information' in animal signals and whether it is useful line of research in relation to language and communication generally.

Insect communication

Kevin Judge, MacEwan University

Insects are the most diverse taxonomic group on Earth, and they have a bewildering array of sensory modalities and modes of communication. I will review ways in which male and female insects communicate during the breeding season, and then focus on my own research on the fall field cricket, Gryllus pennsylvanicus. Like males of most field crickets, male G. pennsylvanicus sing by rubbing their forewings together. Male song conveys information about male age as well as quality, and females use male song to adjust their investment in offspring – increasing reproductive investment when they perceive their mate to be of high quality. I will end by discussing some potential directions of future work.

Similarities and differences between the syntax of bird songs and human language

Richard Hedley, University of Alberta

One feature common to human language and bird song is that the structure of acoustic sequences is highly non-random, governed by syntax. Drawing on my prior work with a songbird, Cassin's Vireo, and other published literature, I will contrast the syntax of songbirds and humans. For example, the order of vocal elements conveys information in some bird species, paralleling how the order of words or phonemes alters meaning in human utterances. In other species, such as Cassin's Vireo, the order of songs does not itself appear to convey information, but has other roles in communication. I will emphasize the diversity of bird song syntax and the multitude of research opportunities it affords.