Title:	Communicative complexity in avian vocalizations
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Abstract:	Abstract: Birds, especially Oscines, have highly developed vocalizations that include both calls and songs. Typically, songs are structurally complex vocalizations serving limited functions of display, while calls can be contextual, wherein different calls serve distinct functions. Several measures of complexity in animal vocalizations have been proposed. These include vocal repertoire size, presence of syntax, semantics, principles of compression and information encoding in signals for receivers, both conspecific and heterospecific. In this thesis, I have examined complexity in the vocalizations of a social passerine, Jungle Babbler (Argya striata). Jungle Babbler is a cooperatively breeding species where individuals produce a variety of calls to coordinate group activities. First, I examined the note repertoire of various functionally-distinct calls of Jungle Babbler. I contrasted these results against the repertoire of the functionally-uniform display songs of Purple Sunbird to understand underlying differences in patterns of signal compositions in these two Oscines. I found that the calls of Jungle Babblers are complex with a large note repertoire but with a low degree of note sharing between calls. On the other hand, Purple Sunbird had a larger note and phrase repertoire with frequent note sharing between phrases. Next, using a series of playback experiments I tested for the presence of compositional syntax in the 'Alert' call of Jungle Babbler and found evidence for it. Further, with respect to principles of information compression, I examined Zipf's law and Menzerath-Altmann law in the 'Alert' call of Jungle Babbler. I found support for both, making Jungle Babbler the first Oscine in which such evidence has been found. Lastly, towards signal information content, I examined heterospecific signal recognition of 'Contact' calls of Jungle Babbler and its congeneric species, Large Grey Babbler. Controlled playback experiments in the field showed that both species responded to each other's calls, despite significant structural differences between the calls. The results were upheld even in regions where they were allopatric, making it unlikely for eavesdropping in these Babbler to be a learned behaviour as it has been traditionally thought of. Overall, my thesis presents multiple lines of evidence for the vocalizations of Jungle Babblers to be regarded as complex from structural, linguistic and functional perspective and as possessing several rudimentary language-like features
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