COULD VOCAL COMMUNITIES OF TERRITORIAL SONGBIRDS CONSTITUTE A PSEUDO-SOCIAL SYSTEM? TESTING DIALECTS AS POTENTIAL COMMUNITY MARKERS IN SOCIAL VERSUS TERRITORIAL CONGENERIC SONGBIRD SPECIES

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Geographical variations in song features of birds are well known from ancient times and Darwin (1871) already named these variations as "provincial dialect", a parallel with human language that has been maintained and developed over the last decades (Marler & Tamura, 1962; Mundinger, 1982; Henry et al., 2015). "Dialects" or microgeographical variations where variations may occur over just a few kilometers or even a few hundred meters have been described in a variety of species (e.g. Jenkins 1978, Catchpole, 1983). These dialects result from social learning and concern both social (e.g. cacique: Feekes, 1982) and territorial (e.g. indigo bunting Paynes & Paynes 1997) species. In the latter case, birds with neighbouring territories share the same song types or local variants. Overall, vocal sharing occurs mostly between individuals living together in the same stable social group or in the same community of territorial neighbours over long

periods of time. Vocal sharing/convergence is thought to convey social identity and to potentially act as a social "password" in social species (e.g. Feekes 1982, Snowdon & Hausberger 1997). Song playplack experiments show that birds tend to react more but with less aggressiveness to their own dialect. However, dialectal communities of territorial neighbours show the same features. These results have been interpreted as dear-enemies' effects (Fisher, 1954; Briefer et al., 2008).

One other hypothesis would be that such "dialect communities" are in fact "pseudo-social" communities. Most territorial songbird species do have a social life outside the breeding season (e.g. parids: smith 1991; Ratcliffe et al., 2007) or even just outside the breeding ground (e.g. reed warbler: Catchpole; 1972; raven: Loretto et al, 2017). Moreover, they do show individual recognition of their neighbours (Molles & Vehrencamp, 2001), and do respond to their song differently according to the location of the playback (Falls & Brooks, 1975; Jaška et al. 2015). This means they have built, through repeated interactions, a representation of, and hence relationship with their closest neighbours, one of the characteristics of the social network according to Hinde (1979). In the present study, we propose that there could be a gradient between sociality and territoriality in songbird species, with dialect community of territorial neighbours being a pseudo-social system. If this is the case, we expect to find the same type of responses to the playback of own versus foreign dialects in a social species as in a close phylogenetic territorial species with dialect communities (i.e. more tolerance for own dialect).Therefore, we tested here the hypothesis that vocal dialects are "social community markers" by comparing two congeneric species of African sturnids, the territorial red-winged starling Onychognathus morio and the colonial pale-winged starling Onychognathus nabouroup. Red-winged starlings are monogamous and pairs remain together for at least three successive seasons. Breeding pairs are extremely territorial and intraspecific aggression is very common during the breeding season. However, they also spend time foraging or roosting in flocks outside the territory and during the non-breeding season. All males produce unitary whistles and birds living in adjacent territories share the same variants of the whistle types (Houdelier et al., 2012). Pale-winged starlings form also long-lived pairs but breed in colonies. Likewise they gather in flocks for foraging. Amongst the different songs of their repertoires, males produce a typical loud song type that is common to all males from the same local population but differs from one site to another throughout southern Africa. In both species, we broadcasted songs either from their own population or another distant one. The results show that

the birds of both species clearly discriminated their own local variant from that of another population but also showed more attention towards their own dialect and more intolerance, like flying off, towards a foreign variant.

These results support the hypothesis that dialectal variations may constitute "social/pseudo-social" markers, reinforcing acceptance and interest between "dialect mates" and intolerance towards strangers, a feature of social communities. These findings converge with the hypothesis that dialects, both in humans and animals, may have emerged as a response to social evolution.

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