Introduction to Zoömusicology
—Hollis Taylor

Musicology seems an obvious word—how better to describe the study of music? However, as it became apparent that the field dealt almost exclusively with European art music, ethnomusicology was pressed into service. At first, it was an umbrella term charged with the task of surveying all the rest of the world's music. Later, the field expanded, at least in some minds, to include even European art music.

Ethnomusicological investigations into the music of the world and the ages prompted a search for musical universals, which were rarely found or agreed upon. The hunt for musical universals has largely shifted to the cognitive level. In addition to the topics of music cognition, perception, and processing, there has been an explosion of inquiries into a range of issues on the natureculture continuum, including music's evolutionary origins and biological basis and the comparison of the faculties of music and language.

Cognitive musicology ...biomusicology ...ecomusicology ...evolutionary musicology ...ornitho-musicology ...zoömusicology. A number of new words describe lively areas of research interest. Coined in 1983 by French composer FranÁois-Bernard Mâche, zoömusicology studies the musical aspects of animal sounds. According to Mâche, "If it turns out that music is a widespread phenomenon in several living species apart from man, this will very much call into question the definition of music, and more widely that of man and his culture, as well as the idea we have of the animal itself" (1983/1992: 95). I suggest a provisional definition: zoömusicology is the human valorization and analysis of the aesthetic qualities of non-human animal sounds.

The discipline of zoömusicology is a pioneer enterprise that requires pulling together concerns and methods from a number of areas as well as real expertise in several others. Pre-existing case study models for such research are absent or at minimum insubstantial. The various tasks at hand include collection of extant recordings, observation and recording of animals in the field, sonographic examination, notation when feasible, and various types of musicological analyses. Such an approach contends with the methodological and conceptual issues that arise when music theory is applied to animal song and animal acoustics.

Although birdsong is often held out as the most intriguing of all animal vocalizations, with a few notable exceptions (Craig, 1943; Sotavalta, 1956; Armstrong, 1973; Baptista and Keister, 2005), the studies of most ornithologists concern biological and evolutionary questions (the ontogeny and function of birdsong, for example), rather than musical ones. Whatever their preoccupations and methodological constraints, ornithologists are given to comments on the possible aesthetic use of sound by birds. The song complexity of passerines that appears to transcend biological requirements is the most frequent area of bewilderment.

In a field known for its concise statements, consider just a few of these comments:

“[it] leaves us to puzzle over the resulting richness and variety” (Catchpole and Slater, 1995: 191); “Sometimes it is clear that birds indulge in a process of improvisation, first memorizing and replicating a theme, and then subjecting it to a series of systematic transformations, as though assuaging an appetite for novelty” (Marler, 1981: 92); “but the far more complex songs of versatile songsters, the songs of songsters which possess large individual repertoires, sometime appear to be so variable as to dramatically violate the requirement of song invariance for species distinctiveness” (Boughey and Thompson, 1976: 5); and finally, from Thorpe: “In a number of cases among song birds, particularly those in which songs of unusual richness and variety are known, we frequently encounter what appears to be musical 'invention'. This includes (1) re-arrangement of phrases, both innate and learnt, and (b) the invention of really 'new' material” (1966: 354).

Jellis also makes the point that some birdsong far exceeds what is necessary for survival and reproduction:

> This is another feature of long-distance signalling: a change in the signal reawakens attention. But it is also a musical principle: tension followed by relaxation, changing rhythms and dynamics, dissonance and resolution. … But it is fair to ask whether these two principles, of redundancy and variety, are enough to account for the degree of elaboration and variation that has been found. It seems unlikely (1977: 196).

Likewise, Klopfer addresses the possible presence of aesthetics in animals:

> If we consider esthetic preferences to mean a liking for objects or activities because they produce or induce particular neural inputs or emotional states, independently of overt reenforcers, can we attribute esthetics to animals other than man? The significance of an affirmative answer lies, of course, in the support this would lend to the belief that there is a biological basis to esthetics. And should our answer be affirmative, that animals can, for instance, have “art,” it will become important to enquire into the basis therefore: what are the historical or ultimate reasons for the development of an esthetic sense: by what mechanisms is the development of the species-characteristic preferences assumed? (1970: 399).

Musicians have no barriers to discussing aesthetics in birdsong, whether under the rubric of zoömusicology or some other designation. Few studies of the aesthetics of animal sounds exist to compare and contrast solely within that system. Martinelli argues that zoömusicology “is too young to transcend human music as a point of reference” (2007: 133). He contends the field “has very little to do with admiring birdsong and considering it music simply for that reason. Zoomusicology is rather concerned with thinking that birds possess their own concept of music” (2002: 98).

Mâche frames the issue differently, privileging those birds that sing best to his ear:

> Of some 8700 species of bird, around 4000 or 5000 are songbirds. Of these, 200 or 300 are of special interest to the musician through the variety of their signals. It may be said *en passant* that this is a ratio 50-100 times higher than that of professional musicians in relation to the total population of France (1983/1992: 96).

He traces the natural musical archetypes and kinds of organization known in

human music to various birdsong vocalizations in his book *Musique au singulier (2001),* suggesting that the origins of music have a fundamental basis in the biology of living things.

Doolittle has emerged as another voice in the field. Her thesis investigating the relationship between human music and animal songs concludes that, while there are close connections, the relationship is analogous: “Though it is not impossible that the [common] reptilian ancestor could have been musical, no evidence suggests this” (2006: 168). She differs from Mâche, contending, “There is no single music,” but rather “many” (ibid.: 175).

Music cognition is complex and problematical, with no simple fit between cultures individuals, or species. Intriguing work is beginning to be done in the field of zoömusicology, and interdisciplinary collaborations on birdsong have begun by those able to maneuver between the crumbling twin pillars of scepticism and romanticism.

Biology and zoömusicology are not mutually exclusive; the field of zoömusicology\ could contain anyone who investigates the aesthetic use of sound in nonhuman animals. While the field's decorum and range are still being formally set, we find activity dates back for decades. The American biologist Wallace Craig grapples with the aesthetic in his study of the song of the wood pewee *(Myiochanes virens Linnaeus)* as early as 1943:

> Our entire study leads to the conclusion that bird songs are true music, they are esthetic art and we believe that this is the essence of the concept, because it is the characteristic which is found in all bird songs and is not found in the other utterances of the bird; also, it is the characteristic which is found in highest degree in the best singers and in those songs which are most distinctly songs and not mere calls (169).

In 1956, Sotavalta combines his training as a zoölogist with his gift of perfect pitch to notate and analyze the songs of two Sprosser nightingales (*Luscinia luscinia*). In 1962, Joan Hall-Craggs undertakes a classic study of the development of song in the blackbird, which pairs conventional transcriptions with sonograms, sometimes together and other times placed alone. Hungarian musicologist Peter Szőke writes on *ornitomuzikológia* in 1963. A decade later, British naturalist Edward A. Armstrong entitles a chapter “Bird Song as Art and Play” (1973: 231-245).

Hartshorne compares birdsong to human music, proposes methods for describing and notating birdsongs, and analyses song structure following six dimensions he developed: loudness, complexity, continuity, tone, closure, and imitativeness (1973). He includes an elaborate formula for rating birds worldwide. Halafoff's survey of birdsong, published in a respected ornithological journal, also displays a foothold in both biology and musicology (1968: 21-40). He employs sonograms and music notation, and he speaks of notes in terms of both frequencies (as he measures kilocycles per second in the range of various birds) and pitches (“A 'pedaled triplet' in the song of the same bird contains two intervals; Ab – E and C – E”) (ibid.: 24).

In 1990, Hindley eschews a sonogram for his lengthy transcription of a

nightingale; instead, he relies on his tape recorder slowed down to x4. He sees himself as a sort of aural detective. His supplemental text displays a connectivity to the fine nuances of the material. Consider this observation: “The timbre of the bird's normal 'voice' is changed using a technique very similar to the way an organist adds a mixture [often a fourth], or nazard (a special organ stop) to a diapason, to provide an 'edge', a nasal quality” (1990: 30).

Registers of birdsong-inspired compositions abound, making a repeat of such catalogues unnecessary. However, one cannot fail to notice that certain composers keep coming up: Janequin and Handel, Vivaldi and Messiaen, and also 'Anonymous'—who penned many folk tunes based on birdsong, some still notable, many others probably lost. Works come up: the *Pastoral Symphony (Symphony No. 6 in F major, Op. 68,* by Beethoven, completed in 1808), *Oiseaux exotiques* (1956) and *Catalogue d'oiseaux (1956-58)* by Messiaen (two of the better-known from among his numerous works inspired by birdsong), and *Cantus Arcticus (*Opus 61), Rautavaara's symphony for orchestra and taped birdsong from inside the Arctic Circle (1972). Recurring birds include, inter alia, the nightingale, canary, cuckoo, starling, mockingbird, skylark, and lyrebird. Native peoples are also mentioned with regularity: the Koyukon of Alaska (Nelson 1983); the Kaluli of Papua New Guinea (Feld 1990); and the Suya Indians of central Brazil (Seeger 1979).

Philosopher and ethologist Dominique Lestel finds a strong analogy between birdsong and human music: “Compte tenu du fossé énorme qui sépare la vie de l’homme et celle de l’oiseau, une telle intelligibilité musicale entre les deux èspeces reste incontestablement étonnante” (2001: 219). Baptista and Keister explore the similarities of birdsong and human music, cataloguing the capabilities of birds as vocalists, instrumentalists, and composers, marveling: “As humans, we can never really achieve what the bird accomplishes, because part of the magic of its song is found in the miracle of the bird itself” (2005: 441).

Herzog finds no fundamental difference between birdsong and human music:

> If music may be defined (excluding the functional aspect of the moment) as patterning of sound, then it can hardly be denied that animals and birds make music. Music is, of course, a particular type of sound patterning. It is said to depend on certain specific traits such as the use of fixed points in pitch—tones--, and transposition. …. From the purely formal point of view, there thus seems to be no reliable criterion that would establish a fundamental difference between animal and human expression in sound. … Until this problem of function becomes clarified, there seems to be no criterion for any theoretical separation of the vocal expression of animals from human music (1941: 4).

Function is a stumbling block for many who reflect on birdsong, since the domain of music is closely guarded as a uniquely human capability—or is it an activity or a perhaps a product? Although Darwin credits birds “with strong affections, acute perception, and a taste for the beautiful” (1871/1981: Vol. II, 108), for others, crediting birdsong with aesthetics is a line that cannot be crossed until we have a theory of mind for animals. (No matter that Darwin also wrote that “the difference in mind between man and the higher animals, great as it is, is certainly one of degree and not of kind” (ibid.: 105).) Therefore, zoömusicologists should expect questions of function and not musicality to often dominate receptions of

their work.

As zoömusicologists begin to contemplate and illuminate other sonic cultures, both through studies of individual species and eventually inter-specific comparative investigations, they will tap a deep vein. Research benefits could be more than theoretical—with new knowledge, birdsong and other animal vocalizations might be integrated into human musical practice in heretofore-unimagined ways as we exploit their novel repertoires. Likewise, zoömusicological analyses might impact musicological methodology.

Few species have been even partially studied. Any claims of human uniqueness in music (or other domains) must be considered provisional without animal research, and I predict such studies will yield substantial surprises. In the words of entomologist Edward O. Wilson, "Every species is a magic well" (1984: 19).

Some of the above first appeared in:

Taylor, Hollis. 2008. "Towards a Species Songbook: Illuminating the Vocalisations of the Australian Pied Butcherbird *(Cracticus nigrogularis)."* PhD, Western Sydney University.

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And is explored in greater detail in:

Taylor, Hollis. 2017 (forthcoming). *Is Birdsong Music? Outback Encounters with an Australian Songbird*. Bloomington: Indiana University Press.

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