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Review Article

THE EVOLUTION OF MUSIC: HUMAN AND NON-HUMAN

By Andy Hamilton*

Why do people make music? How did musical abilities evolve? Recent years have seen a revival in evolutionary explanations. There is debate concerning the grounding of musical ability in human biology, and whether it played a role in our survival as a species. Darwin's theory of evolution offers two possible explanations, natural selection and sexual selection. For music, he favoured the latter. In *The Descent of Man*, Darwin develops the concept of sexual selection to account for traits not obviously related to survival: 'I conclude that musical notes and rhythm were first acquired by the male or female progenitors of mankind for the sake of charming the opposite sex' (1871, p. 572). Musicality evolves as a courtship display in reproductive partner choice—a costly, honest signal of advanced motor skills and cognitive abilities indicating good genes, the result of selection pressure. In the chapter titled 'Secondary Sexual Characters of Man', Darwin applies sexual selection to vocal expression, the role of beauty in marriage, competition for mates, and sexual difference. However, he remains puzzled by music's apparent evolutionary redundancy: 'As neither the enjoyment nor the capacity of producing musical notes are faculties of the least use to man in reference to his daily habits of life, they must be ranked amongst the most mysterious with which he is endowed' (ibid.) Apparently, musical ability had no role in natural selection.

Current theories concerning the origins of music are divided into adaptationist and non-adaptationist. Darwin's sexual selection hypothesis is an adaptationist theory that is still considered. Other recent adaptationist views are that music originated in carers' musical vocalizations to infants, which enhance parent–infant bonds and promote infant well-being; and that music promotes group cohesion. A non-adaptationist view considers music as a technology that uses existing skills and has important consequences for our culture and biology—fire is another example. On the non-adaptationist view, music is an exaptation, spandrel, or evolutionary by-product of other skills. The puzzle remains as to why music is such a widespread behaviour in our species if it has no obvious adaptive function. Music, like language, is a universal phenomenon, but musical behaviour has no apparent immediate survival value.

Miriam Piilonen's excellent book provides essential background to these current debates.[1] She examines how evolutionists such as Darwin and Herbert Spencer, and related thinkers such as Edmund Gurney, considered music. Her interdisciplinary

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[1] *Theorizing Music Evolution: Darwin, Spencer and the Limits of the Human*. By Miriam Piilonen. Pp. 168. Oxford Studies in Music Theory. (Oxford University Press, New York, 2024. ISBN 978-0-19-769 528-9, £59.)

approach connects Victorian music-evolutionism with the recent subfield of evolutionary musicology, exploring how historical evolutionists used music to draw a boundary between human and animal. She resists what she calls the 'Darwinization' of music-evolutionist history, which treats Darwin as the only relevant historical figure. (An example of this tendency is Michael Spitzer's *The Musical Human* (2021), which gives Darwin credit for Spencer's mimetic theory.)

Chapter 1 outlines Victorian musical culture, showing that it was more receptive to Spencer's music theory than Darwin's. In *The Descent of Man* (1871) and *The Expression of the Emotions in Man and Animals* (1872), Darwin argued that music is a proto-language common to both humans and animals. Spencer, in contrast, in 'The Origin and Function of Music' (*Fraser's Magazine* (1857)), viewed music as a specifically human stage of evolutionary advance, beyond language acquisition; all music is originally vocal, and music originated in speech. After publishing *The Principles of Psychology* (1855), Spencer wrote to Darwin, and they began a lifelong correspondence. But while Darwin's music theory foundered, Spencer's became popular. Decades later, Spencer become known as a 'social Darwinist', and Darwin was accepted as the father of evolution. Critics compared Spencer's intellectual achievements—absurdly—to those of Aristotle, Kant, and Hegel. He was the first philosopher to sell a million copies of his works in his own lifetime. Reflections on the implications of historical music-evolution theories for current research mark the end of Piilonen's chapter 1, as they do for every chapter in the book. She then concludes with a reflection on an underappreciated aspect of Spencer's musical thinking: his philosophical reflections on the earworm (a mental tune that plays on repeat).

Chapter 2 ('Charles Darwin vs. Herbert Spencer on the Origins of Music') compares the two competing evolutionary accounts of music. To reiterate, Darwin sees music as a kind of proto-language, evolving into speech, while Spencer thinks the opposite: music evolved from impassioned speech. Piilonen explains their divergent ideas about the sonic expressions of animals, their questions about what distinguishes a 'note' from a 'noise', and their shared view of music as a universal good. Whereas Darwin defined music as a proto-language that emerges in instinctual urges for domination, conquest, and sexual reproduction, Spencer regarded music as an advanced province of the human species, which alone possesses the emotional 'force' and 'variation' necessary for musical expression.

Chapter 3 ('Sound Symbolism in Spencer's Evolutionary Thought') analyses Spencer's theory of mimetic uses of sounds to represent things, which underlies his account of the origins of music and language. An increasingly dynamic emotional capacity, unique to humans, is expressed and evidenced by an equally dynamic musical capacity, he holds. In 'Progress: Its Law and Cause' (1857) and *Philosophy of Style* (1852), Spencer argues that language began as sonic imitations of the phenomenal world. Piilonen concludes her chapter with a defence of contemporary theories of sound symbolism.

Chapter 4 ('The Darwinian Musical Hypothesis') turns to Darwin's theory of music and sexual selection, found in *The Descent of Man* (1871) and *The Expression of the Emotions in Man and Animals* (1872). Having observed the sonic behaviours of animals during mating season, Darwin extrapolated their meanings to early humans, arguing that musical displays stem from strong emotions found in human and non-human courtship rituals. He suggests that these mating calls of our half-human ancestors now 'call up vaguely and indefinitely the strong emotions of a long-past age' (*The Descent of Man* (Harmondsworth,

2004), 638). Piilonen ends the chapter with a critique of the Darwinian adaptationist revival—a conflation of natural selection with evolution, she argues. In Chapter 5 ('Edmund Gurney's Darwinian Music Formalism'), Piilonen turns to Gurney's *The Power of Sound* (1880). For her, evolutionists risk making the same mistakes that Gurney made when he combined Darwinian evolution with music analysis.

Piilonen is insightful on the contrast between Darwin and Spencer. Spencer seems to forget the random element in Darwin's theory—an element that is very hard for humans to accept. Like Steven Pinker in a later era, he pushes evolution too far in terms of what it can explain. Spencer's Social Darwinism is an ideology, not a scientific theory. According to Piilonen, Darwin vacillated on how Spencerian he should be. 'Survival of the better-adapted to present conditions' is a better motto for Darwin, I would argue. Piilonen regards the category of 'music' as too flexible to be conceived in evolutionary terms—something that Darwin, who was a much more sophisticated thinker, knew better than Spencer.

This is an incisive and stimulating book, and I learned much from it concerning the historical background of the evolutionary theory of music and its philosophical implications. As an intellectual historian, Piilonen does not restrict herself to geniuses such as Darwin. She also addresses popular thinkers influential in their lifetime whose work has not passed the test of time—Spencer is a good example. Piilonen shows how Darwin's ideas are enmeshed in Victorian ideologies, and she is careful to condemn scientific racism in his writings and those of Spencer. Moreover, her book stimulates philosophical consideration of evolutionary theory and music—in particular the opposition between evolutionary and cultural explanations. This opposition rests on the more fundamental contrast between scientism and humanism. The philosophical discussion has an impact on discussion in intellectual history.

The question 'Why do people make music?' requires much philosophical analysis. The answers offered by evolutionary theory, such as 'In order to attract the opposite sex', are one kind of answer—there are many others. Music-making has much broader explanations than evolutionary theorists seem to assume. For some, music is the most important thing in their lives—as shown in the title of Duke Ellington's autobiography, *Music Is My Mistress*. One could argue that 'Why do people spend so much time making and preparing food?' and 'Why do people play sport?' excite debates similar to the question concerning music. Preparing food and playing sport have more plausible evolutionary explanations than producing and enjoying music. Food has to be prepared to make it digestible and, in some cases, safe to eat—some raw beans are poisonous. We must be physically fit and able to cooperate with each other to hunt and gather food. Even in these cases, however, cultural as well as evolutionary explanations are required—people do not eat simply to satisfy nutritional requirements.

The musicologist Gavin Steingo's *Interspecies Communication: Sound and Music beyond Humanity* is an excellent monograph that covers areas related to Piilonen's, but is rather different in aim and tone—more conversational and autobiographical, less sober and scholarly.[2] It examines attempted communication between humans and animals, and humans and alien life, reflecting current interest in communication with non-humans—it may belong with other recent titles on this topic including Helen Czerski's *Blue Machine* and Susan Casey's *The Underworld* (both 2023), and Amorina Kingdon's *Sing*

[2] *Interspecies Communication: Sound and Music beyond Humanity*. By Gavin Steingo. Pp. 256. (University of Chicago Press, Chicago and London, 2024. ISBN 978-0-226-83 133-6, $99.)

Like Fish (2024). It reflects the later twentieth-century concern with animal communication reflecting new scientific methods of listening to sounds in the oceans and in cosmic space. The songs of whales became a major topic. The scientist most closely associated with interspecies communication is John Lilly (1915–2201), and Steingo returns to him frequently, examining his studies with dolphins and his interest in extraterrestrials—Steingo also discusses attempts by humans to receive messages from civilizations in outer space, often turning to music in the attempt. He discusses biosemiotic theory and considers the value of scholarship in the humanities for scientific inquiry—thus addressing the philosophical issues concerning scientism versus humanism that I have just raised.

As Steingo writes in the 'Preface', the book is anchored by two arguments: that humans communicate with non-humans in multifarious ways, and that this communication gives rise to less obvious and rational feelings. Steingo is struck by the contrast between the objective stance essential to scientific monographs and papers and the more personal memoirs in which scientists talk about their love and affection for the animals that they work with. In chapter 3 he examines the 'symptomatic communication process' that balances semantic, scientific, ethical, and political registers when attempting to communicate with non-humans. In chapter 4 he discusses the philosophical backdrop, particularly what he regards as Kant's ocularcentrism and sensory hierarchies—here as elsewhere, Steingo tries to avoid anthropomorphism. Chapter 6 examines biosemiotics, which considers how living organisms produce, communicate, and interpret signs and meanings; chapter 7 looks at how discussion of interspecies communication is pervaded with racial biases and colonial legacies. Finally, Steingo considers Afrofuturist artists such as Sun Ra and Kapwani Kiwanga and the challenge that their work poses to post-Enlightenment rationality.

The book is engagingly autobiographical and replete with intriguing and often amusing anecdotes. For instance, in Paris in 1798, an audience gathered for a performance of Rousseau, Haydn, and other composers—but their main interest was in the reaction of two elephants who were also present. According to contemporary accounts, Steingo explains, the animals swayed their trunks rhythmically to the music. The story is cited in James Johnson's classic *Listening in Paris* (1996), and has become a staple of the musicological literature. However, Steingo is more interested in the scientific literature that analyses elephants' infrasonic communication, which he is careful not to elevate to the status of 'elephant language'. He is keen to explore what the elephant experiences when their mahout sings.

In the chapter 'Lilly's Wager', Steingo points out that 'it is only a slight exaggeration to say that music saved the whale'. He goes on to explain how recordings of whale songs were the single most important asset of the battle against the whaling industry—I well recall Charlie Haden's 'Song for the Whales' on *Old And New Dreams* (1979). Steingo distinguishes the metaphysical and more prosaic aspects of whale song, and recommends that the word 'song' has outlived its usefulness in connection with animal vocalizing (though not birds?):

> I even suggest that we retire the word song in relation to animal vocality. The notion of whale song was accurate enough for the 1970s, and at that particular historical juncture, the word did tremendous political work: it helped anti-whaling activists achieve the surprising feat of, essentially, saving the whales. But the usefulness of the word has run its course. The problem is not so much that the word is wrong (although an argument could be made for this as well) but that it is too freighted with metaphysics to be helpful any longer. (p. 49)

John Lilly was the most important figure in our shifting appreciation of cetaceans, Steingo argues, and he never suggested that dolphins sing: 'Although Lilly has long been dismissed in mainstream science, the ideas he promulgated in his 1961 book *Man and Dolphin* have since become mainstream' (p. 23).

As Steingo insists, one cannot speak about the animal without making assumptions about humans. However, I would question some of his philosophical assumptions—for instance that non-human animals 'possess a rich array of cognitive capacities, perhaps even consciousness' (p. 7). I would argue that baboons, to take the example that Steingo then discusses, clearly possess consciousness—the question is whether they possess *self*-consciousness, as illustrated for instance by the mirror test. (Can the animal recognize itself in a mirror?) Another question I would like him to answer is, 'How does animal vocalizing impact on evolutionary explanations of the development of music?' Steingo's book is scholarly, though not in the sober style of Piilonen's. Both titles are highly recommended.

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