

WHAT BIRDS SING

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I spend a lot of time playing music with animals. Sometimes bugs, sometimes whales, but most often birds. In fact, just the other night at HKW around the corner, we had a few hundred people out in the Tiergarten listening to several human musicians play and sing live with a few nightingale musicians. Together, we made something no one species could make alone.

A person would only attempt something like that if they believe birds can be musicians too. And often I am asked this question, "David, do you really think birds are making music?" Then I answer, "I *know* birds make music. I'm just not sure humans do."

Is that some kind of joke? Not at all. We are all right now at the Berlin Philharmonie, one of the finest venues for classical music in the world. Yet like much of culture today, just what constitutes 'classical' music is an idea under debate. Is it just music that follows conventions of European harmony, instrumentation, and notation, requiring a certain amount of planning to be on the page?

Of course we have wrung our hands around such questions for far too long. And yet we do recognize that some pieces of music, and some composers, have 'stood the test of time,' that is, they are appreciated and valued over many centuries since they wrote their music, many generations after the constraints of their worldviews have irrevocably changed. Often it is the *music* of a past era that seems the most contemporary thing that has survived from that era, since our musicians today can resuscitate that music and make it seem uniquely alive, so that the classical, from long ago, becomes resplendent right now, luminous in the present moment.

The ancient melodies and harmonies remain relevant to us today, because our love of them has been accepted by our culture even as we have evolved.

But think about it, what we call classical music is really just a few hundred years old at most. A blip in time even in human evolution, not to speak of all those other creatures and cultures out there.

What kind of music has been around for not hundreds but *millions* of years? The songs of birds. This is the most classical music in our midst, the melodies that have stood the test of a lot more time than Messiaen, Beethoven, and even Bach. There must be something right, true, and essential about them. In the interconnected web of life, they have an exact and perpetual place.

Sure, birds have made such sounds for millions of years. But why connect them to music, why call these sounds 'songs' at all? There must be some reason for this, because most human languages call at least some sounds of birds 'songs,' to distinguish them from other sounds birds make known as 'calls.' The calls are sounds with very specific meanings, like "Feed me," "watch out," "hey, I'm over here," or "get lost." Songs, on the other hand, are most often produced by male birds, for two main reasons: to defend a territory, and more often, to attract a potential mate.

Is that all there is to it? Is that why birds sing? I suppose. But try it out on people. Why do we make music? To stand our ground and attract a mate? Sure, it might help. But no human musician or music fan should be happy with that answer.

Why does a chaffinch, say, do well enough with a song like this: *[track 1, chaffinch song]* while a nightingale needs a song like this: *[track 2, nightingale]* with hundreds of phrases sung across the street in the Tiergarten for hours throughout the night? If both songs have the same purpose or function, why are they so different?

Perhaps *why* birds sing is not as important a question as *what* birds sing.

The answer lies in aesthetics. Something that Charles Darwin already realized more than a century and a half ago. He listened to complex birdsongs like that of the nightingale or the blackbird, and looked at extravagant displays like the peacock's tail, and wrote in a letter to his colleague Asa Gray, "these things make me sick!" Why? Because the notion of survival of the fittest, the basic

tenet of natural selection, could not explain such excesses. There had to be another evolutionary force at work, something Darwin went on to name as 'sexual selection' or 'aesthetic selection.' Females who were taking in such behaviors, over time, sometimes preferred unusually elaborate and extensive dances, displays, and, most important for us, sounds. These sounds became stylized as the distinguishing characteristics as each species became defined. Along with appearance, behavior, and habitat, the music of each kind of bird is thus completely determined by the whims and preferences of the females who are the only ones who know the elusive aesthetics of the avian world.

A pretty sexist view of nature, for sure, and not without many nuances and deviations from the norm, but all this led Darwin to write, in *The Descent of Man*, that birds "have strong affections, acute perception, and a taste for the beautiful."

He continues: "That animals utter musical notes is familiar to everyone, as we may daily hear in the singing of birds." Darwin knew there was an elegance to these sounds that no amount of deciphering of the song as language could touch. He distinguished bird songs from other bird sounds because they have that "more subtle and more specific effect which we call *musical* expression . . . , the delight given by melody." Whereas a scream usually sounds like a scream, whatever animal is making it, a song is often more elaborate than it needs to be. Its beauty and identity lie in the details.

These details, however, are the part of the bird's music most often ignored by biologists. This is because they think aesthetics are more subjective than clearly defined biological functions. The rest

of us, however, are happy to take in such music, and, as with most human music, we're able to love it without having to figure it out.

Analysis is not really necessary to appreciate music, whether this music comes from a person, or from a bird. What makes a particular sound musical? Those qualities that *separate* music from language. A musical 'utterance' has a beginning, middle, and end. A shape and a form. A performative sense contained in the phrasing, a quality of tone, and above all a defined emotion conveyed only by the whole, not by the separate parts.

If it's language, you hear the word, you get the message. If it's repeated too much we quickly get bored. Repeat it too much. Repeat it too much. Repeat it too much. You get the picture. You don't want to hear the words and the message again again again again.

But if it's *music*, a few repetitions can turn a song into an earworm. Once we start to love a song, we can't get enough of it. We want more more more more more more more of the same.

That's probably the closest we can come to feeling as a bird. To be able to love a song in the trees so much we want nothing more than to hear it resounding over and over again in our heads, deeply touching certain neurons inside our brains, precisely attuned to just the perfect song that is eternally right for us.

That's the kind of aesthetic sense evolved to perfection inside the minds of birds. Would that we humans could ever be so certain of any of our fleeting, restless, constantly changing music! Every week we're still looking for the next hit song to replace the old ones. We are a species whose urges are impossible to satisfy.

That's why we've done with the planet what we have, and look at the result.

Birds have no such need. They know who they are, and what their best music is. That's why Olivier Messiaen called them "the opposite of time."

So it can't hurt to step back, adjust our ears, and listen to their music a bit more carefully than we usually do.

Here's the song of the veery, a common bird in the forest in America near where I live.

[veery regular speed, track 3]

Listen what happens when you slow this song down, and bring down the pitch as well:

[veery slowed, track 4]

Fabulous! It's like a jazz trumpet solo, with nuance, a cushion of air, even a sense of swing. Now is this how the female veery hears the song? Possibly. Some studies have shown that birds can hear five times faster than humans. At this speed, at this pitch, even we humans can easily catch the groove.

Now here is a related species of songbird, the hermit thrush. Looks almost exactly like the veery, and it's song is related, but this species has evolved the need for a much more varied tune:

[hermit thrush regular speed, track 5]

Slow this one down and you start to hear its variety and gradation of pitch and tone:

[hermit thrush half speed, track 6]

At this speed, we start to hear the magic of this subtle and deep birdsong, about which poet Walt Whitman had this to say:

O liquid and free and tender!

O wild and loose to my soul—O wondrous singer!

Each phrase starts on a different place on the musical scale. It's not exactly tuned to human major or minor, but has a logic and beauty all its own.

Slow it down even further, and I am given no choice but to play along with it:

[hermit thrush slowed playalong, track 7]

[\[here Rothenberg picks up his clarinet and plays along with the recording of the slowed-down hermit thrush\]](#)

The music of the hermit thrush lies beyond human understanding, but when we join in, we may feel our way closer to its meaning.

Music is not a language, not even a universal one. It is something beyond language, a form of communication that reaches from our world into the more-than-human world. It can connect us to nature, help humanity fit into the world surrounding us instead of beckoning us to destroy everything in our path.

Although scientists have tended to shy away from aesthetic questions when confronting birdsongs, this is starting to change. The great ornithologist Donald Kroodsma really tried to get inside the music of the hermit thrush, and he had this to say about it: "Could this be a general rule by which he sings, that he chooses the next song so that it is especially different from the one he just sang? Perhaps his performance is based on some rule of contrasts, such that not only are successive songs never the same, but they are especially different from each other."

Over the pandemic I tried to figure out the rules used in the songs of another virtuoso bird species, the northern mockingbird, working together with an American field biologist, Dave Gammon, and a German neuroscientist, Tina Roeske. Though this bird is famous for copying the songs of other birds, what we found is that the bird really composes his own songs out of the music of other species, following very specific aesthetic rules unique to his species alone.

[a bit of mockingbird, track 8]

Moving from one phrase to the next, mockingbirds change pitch, change timbre, stretch, and squeeze the lengths of their phrases. They 'morph' one song into something just a little bit different than what came before, just like many human kinds of music do.

Perhaps musical aesthetics are not as unique to each species as we first thought. Our paper, "Mockingbird Morphing Music" is one of the first scientific writings to specifically articulate the musical rules of a songbird in clear and comprehensible human terms.

"If a lion could talk," wrote philosopher Ludwig Wittgenstein. "We would not understand him." But if a lion would sing, we would certainly get him and want to merge his music with our own.

This possibility has illuminated much of the fine music in the concert you are about to hear. And it gives me hope for our kind in these times of such great tension and strife.

Go out and listen closely to the oldest music we know. And find your own way to join in.

Cold Spring, NY
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German equivalents:

chaffinch	<i>Buchfink</i>
nightingale	<i>Nachtigall</i>
veery	<i>Weidenmusendrossel</i>
hermit thrush	<i>Einsiedlerdrossel</i> (<i>Eremitdrossel</i> in Danish)
mockingbird	<i>Gartenspottdrossel</i>