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BIRD SONG AND PHILOSOPHY

I first met Charles Hartshorne on July 10, 1961, when he and his wife, Dorothy, arrived at our farm in the Valley of El General in southern Costa Rica. They still looked fresh after a nine-mile ride from the nearest village over a rough road in a four-wheel-drive car, packed to capacity with people and their luggage, that served as a bus. They had arranged by correspondence to spend a few days with us after accompanying a birding tour in neighboring Panama.

Next morning, in the rain forest, I was introduced to Hartshorne's method of studying bird song. On a small tape recorder, he captured the voice of a bird, often one unseen amid dense vegetation. When he played back the recording, the singer, mistaking the reproduction of his own song for that of a rival invading his territory, advanced to meet the intruder, singing more loudly and profusely, often exposing himself to view for positive identification, while Charles made more adequate recordings of the songs for future study. On rainy afternoons, we sat on the porch while he, using a notation that he had developed, studied the voices of a pair of Rufous-breasted Wrens *(Thryothorus rutilus)* singing antiphonally in surrounding trees.

After five days on the farm, we stayed for two nights at an inn situated at an altitude of nearly 10,000 feet on the Cerro de la Muerte in the Cordillera de Talamanca. Here we heard, and Charles recorded, the songs of such high-altitude birds as the Timberline Wren *(Thryorchilus browni)* and the Black-billed Nightingale-Thrush *(Catharus gracilirostris)*. Then we continued along the Inter-American Highway to San José to attend the II Congreso Extraordinario Interamericano de Filosofía, where Hartshorne read papers on "Whitehead's Conception of God," and "Whitehead's Theory of Prehension." (The president of this congress was Abelardo Bonilla, vice-president of Costa Rica, and for the week of the congress its acting president, the elected president of the country, Mario Echandi, having temporarily resigned to honor philosophy, and realize briefly the Platonic ideal that philosophers should become heads of states.)

Lewis Edwin Hahn, ed. *The Philosophy of Charles Hartshorne.* La Salle, Illinois: Open Court, 1991.

After the closure of the congress, we went down to the Inter-American Institute of Agricultural Sciences on the Caribbean slope to hear certain wrens. By recording their song and playing it back, Charles drew Black-throated Wrens *(Thryothorus atrogularis)* to the edges of the dense, lush thickets where they lurked unseen. Once he had two pairs of these wrens dueting simultaneously in plain view. Another Black-throated Wren, who apparently lacked a mate, repeated his lovely songs over and over. As we walked away from these superb musicians, Charles made a characteristic remark about the happy nature of the bird, who sang enchantingly instead of complaining about his solitary state.

Hartshorne's fortnight in Costa Rica was one of the briefer of his many visits to foreign countries, and an example of how he has combined his profession, philosophy, with his life-long avocation, bird study. Before writing *Born to Sing* he had spent more than fifty years reading about singing birds and listening to them in the field in about forty of the United States (including Hawaii), and in Australia, Japan, and India (in each of which he resided as a Fulbright professor). He had made less intensive but usually rather extensive observations in Nepal, England and several other European countries, Middle and South America, Jamaica, Uganda and Kenya, New Zealand, Fiji, the Philippines, Malaya, Hong Kong, and Taiwan—a breadth of field experience that few professional ornithologists can match. Moreover, he had listened to recordings of bird songs from many parts of the world and searched through regional bird books for descriptions of songs. Such was his ample preparation for writing his book.

Born to Sing: An Interpretation and World Survey of Bird Song, a book of 304 pages published in 1973 by Indiana University Press, contains the substance of earlier papers in ornithological and other journals and much more, so that we may regard it as the definitive exposition of his views. To appreciate the wide scope of this book, it should be considered from three aspects: (1) as a contribution to ornithology as a science based upon observation and experimentation, (2) as an essay in aesthetics or musicology as applied to bird song, and (3) as a contribution to the philosophy of nature. Let us take them in this order.

Basic to the scientific study of bird songs is their description in objective terms. The best way to convey to others what a bird sounds like is to play a record or tape-recording; but these are not available for every bird, nor can they be supplied with every book or article about bird songs. At the other extreme from the sensuous experience of hearing a bird song is the sonogram or audiospectrogram, made in a laboratory from a field recording, and indicating by rising and falling lines the frequencies and temporal distribution of all the notes in a complex song. Helpful to the trained investigator, they mean little to

the uninitiated. Before portable tape recorders and sonograms were invented, students of bird songs tried to represent them by diverse systems of horizontal, vertical, and oblique lines, in a two-dimensional notation that could be made in the field. The musically educated found that they could record many birds' songs by staff notation, like any other music, but the verbal description is most often used by people able neither to interpret sonograms nor to read music. Many bird songs, like those of the Rufous-browed Peppershrike *(Cyclarhis gujanensis)* readily suggest brief phrases in one's native language; or they can be paraphrased by sequences of syllables, like the *choy che chee cheer cherít* of the Garden Thrush *(Turdus grayi)* that has been singing in our shade trees. Although no two people appear to hear a bird say exactly the same thing, when accompanied by adjectives such as "liquid" or "harsh," "cheerful" or "melancholy," this may be, despite its limitations, the best way to convey to most people some notion of the character of a bird's song. After explaining and illustrating each of these methods of describing songs, Hartshorne concludes that none satisfies everybody's needs and each has some value.

To carry out his project of selecting the world's best singers, Hartshorne developed a system of assessing their songs by relatively objective physical features. Those that he considered most relevant are (1) loudness or volume, (2) scope or complexity, (3) continuity or length of pauses in a song sequence, (4) tone or musical quality of the sounds composing a song, (5) organization or its coherence and structure, and (6) imitativeness, or the tendency to reproduce sounds that the singer has heard, to learn songs by listening to them. Each of these six qualities of a bird's song is rated on a scale of one to nine, giving a possible maximum of 54. Although no bird attains this high degree of perfection, some of the best singers make scores of 47 or 48.

Born to Sing deals principally with the Oscines or Songbirds, that great division of the Passeriform order with the most highly developed vocal organs and, therefore, the finest songs. After specifying the basis of his choice, Hartshorne prepared a world list of superior singers, with scores of 42 or more. It contains 192 species of Oscines, or nearly 5 percent of the approximately 4000 species in this suborder, plus the two suboscine lyrebirds or Australia. Each of the world's major zoogeographical regions contributes its share; but the "sometimes maligned" tropics, with only one third of Earth's land surface, contains about half of its highly musical species. The large families richest in superior singers, with more than 20 percent of their species in the list, are the mockingbirds and thrashers (Mimidae), confined to the New World; the wrens (Troglodytidae), with a single exception also confined to the Western Hemisphere; and the cosmopolitan thrushes (Turdidae), of which 65 of its 307 species (21 percent) are among the elite. The Old World warblers (Sylviidae) contribute 28 species to the distinguished group, but this is only 7 percent of their 398 species.

Families of Songbirds contrast greatly in the development of song. Wrens and tanagers are widespread in the Americas, where in many regions, especially in the tropics, several species of each occur in the same locality. Fourteen of the 59 species of wrens rank among the superior singers, but none of the 223 tanagers (although perhaps, if better known, some would merit inclusion). Why this great difference? Among tanagers are many of the most beautiful of tropical birds. As fruit-eaters who fly to trees and shrubs that, now here, now there, yield abundant crops of berries that are shared with many other birds, tanagers tend to be at most weakly territorial; they have little need of song to proclaim possession of territory. Brightly colored, mostly avoiding dense concealing vegetation, they maintain contact with their companions largely by sight, with a minimum of vocalizations. Many tanagers have no utterance worthy to be called song.

Lacking the bright colors so prominent among tanagers, wrens are often beautiful but never brilliant. The many nonmigratory species of warm lands live throughout the year in pairs or family groups that search for insects and spiders by hopping and flitting through dense foliage and vine tangles where visibility is narrowly restricted. Frequently unable to see each other when only a few yards apart, mates maintain contact by their voices. Often they sing antiphonally, the male often beginning a song that is continued by his partner, the two articulating their phrases so well that unless the listener is between them he seems to hear a single gifted singer. Moreover, wrens tend to be much more strongly territorial than tanagers. The development of song in these two families corresponds to their need of it.

In a wide survey of the relation of habits and habitats to the development of song, Hartshorne found that the most highly endowed singers live in situations and with habits that render visual means inadequate to attract and hold mates and secure territorial privacy. Birds who live in poorly lighted places, amid dense vegetation or near the ground, tend to have better songs than birds who spend more time in sunshine. Birds who glean insects amid concealing foliage, in the manner of Old World warblers, are more songful than aerial flycatchers like swallows. Although visibility is good amid the sparse vegetation of very arid country, meagerness of resources causes birds to be widely spaced, with voices well developed to proclaim their presence to distant neighbors. Solitary birds tend to sing better than the more social or gregarious species. Birds with inconspicuous plumage are more likely to sing well than those brilliantly attired. "The isolated and, at least when feeding, invisible individual is the typical singer, in touch with even one other of his kind only by voice." Although this is generally true, the rule is not without exceptions. Soberly attired Black-headed Brush-Finches *(Atlapetes atricapillus)* and other members of this neotropical genus sing poorly amid dense thickets and dim undergrowth;

Spotted-breasted Orioles *(Icterus pectoralis)* and Black-thighed Grosbeaks *(Pheucticus tibialis)*, both handsome in yellow and black, sing superbly in open crowns of trees.

Believing that birds who sing better should sing more, Hartshorne attempted to correlate the time a species spends singing with the quality of its songs. He developed a rather elaborate formula to calculate the numbers of hours a bird might devote to effective singing in the course of a year. As he expected, the correlation between song development and effective song season was high; but his data were hardly adequate for the undertaking.

A comparison of two birds who sing around me illustrates the difficulty of learning how much a bird sings. By far the best singer of the two is the Garden Thrush, who generously pours forth his sweetly varied songs during his breeding season from March to June, then falls silent for many months. The Orange-billed Nightingale-Thrush *(Catharus aurantiirostris)* repeats his quaint, short, less musical verses less freely, but he sings through much of the year. I would hesitate to say which of the two sings for more hours during the twelve months. It would require infinite patience to quantify the actual amount of singing of any individual or species throughout a year; and the undertaking would be more difficult for migratory birds, a few of which sing an appreciable amount in their winter homes, or while migrating. I agree with E. A. Armstrong that the thesis that birds who sing better sing more, probable as it appears, needs to be set upon a firmer foundation.[1]

Although *Born to Sing* deals chiefly with the Oscines, a chapter is devoted to the songs of the "less well-equipped singers," including birds of the "primitive" orders from tinamous to barbets and woodpeckers, and the suboscine Passeriform birds, from broadbills and woodcreepers to the American or "tyrant" flycatchers. To have painstakingly gathered, directly in the field and from recordings and published writings, such a vast amount of information on the songs of so many avian families, evaluated these songs by objective criteria wherever possible, and made much of this information readily available in carefully constructed tables, was a labor of love for which naturalists should be grateful. These tables should help those who delight in bird song, and have the means to travel, to hear the best singers in their native woods and fields. The analysis of the factors, behavioral and ecological, which favor the development of superior song is enlightening. These features, among others, make *Born to Sing* a substantial contribution to ornithology, the value of which is independent of its more controversial, but not for that reason less important, aspects, to which we now turn our attention.

One must be aesthetically insensitive not to recognize the beauty of bird songs, nor to be emotionally stirred by many of them, especially when heard in their natural settings, where they are most effective. Since many of these songs

can be written in conventional musical notation, we think of them as music. Whether they are correctly so-called is a technical question to which Hartshorne addresses himself in the opening chapters of his book; as a student of aesthetics who wrote that "music is central to my life," he is well equipped for this undertaking. The main theme of his book is "the possible scientific uses of the aesthetic analogy between other animals, especially birds, and man with respect to music." Although the book's factual content is largely in the later chapters, it is underpinning for this main theme.

Order, our author holds, is the vast realm lying between the deadly extremes of chaos and mechanization. Beauty is created by the harmonious integration of diverse items. To be aesthetically satisfying and rank as music, a sequence of sounds must be neither wholly random nor dully repetitious but contain pleasing contrasts. The songs of many birds satisfy this requirement. Avian songs resemble human music in that every simple musical device, including transposition and simultaneous harmony, occurs in them. Perhaps the greatest difference between avian and human music is the brief span of the bird's repeatable patterns, commonly three seconds or less, rarely as much as fifteen seconds, whereas a human composer can develop a motif that lasts an hour.

I believe, with E. A. Armstrong, that Hartshorne, and others, underestimate the mentality of birds.[2] Their short-term memory, or conscious present, may encompass only a few seconds; but experiments reported by Edwin Boring suggest that man's conscious present is of the same order.[3] Birds certainly do not dismiss experiences from their minds as swiftly as is often supposed. Years ago I had a striking demonstration of their retentiveness. In a clearing amid a Panamanian forest, a snake that preys insatiably upon eggs and nestlings, lurking in the grass for a long while, kept a pair of Crimson-backed Tanagers *(Ramphocelus dimidiatus)* from attending their young in a nearby nest. For an hour after I removed the snake, unseen by the parents who flew away as I approached, they continued to peer down into the herbage from which it had vanished, neglecting the cries of their hungry nestlings. They did not promptly forget a distressing experience. And as to the memory that enables many migratory birds to alternate twice yearly between pin-points on the map thousands of miles apart—perhaps a certain nesting tree in Canada and a feeder in Costa Rica—it commands our admiration but baffles our understanding. When we recall that the bird's vital rhythm is more rapid than ours, with much swifter heartbeat, respiration, and metabolism, so that a second must seem longer to it than to us, we may conclude that the songs of the more highly endowed singers are respectably long. A longer, more involved song might defeat the song's purpose of facilitating rapid specific and individual recognition.

In conformity with his basic principle that aesthetic value lies between the extremes of chaotic multiplicity and mechanical regularity, Hartshorne emphasizes the monotony threshold, or limit of tolerance for repetition. Changes, or contrasts, stimulate attention; persistent repetition depresses response. However, if the interval between repetitions is longer than the song, or than an animal's span of immediate attention or conscious present, the repeated stimulus may fall upon its senses with a freshness that holds attention.

Singing birds have two methods of avoiding hypnotic monotony. Those that repeat the same simple song over and over tend to introduce pauses longer than the song between its repetitions. Those who sing more continuously vary their notes, or have a repertoire of different songs. Repetitious singers tend to perform discontinuously; those who sing more continuously tend to be versatile. Since normally a bird sings freely, without external constraint, it is not likely to perform so monotonously that the song's interest to the singer or his avian listener, mate or rival, is dulled to the point where its biological function is impaired. By avoiding monotony, a bird reveals its aesthetic sensitivity. Birds who, deficient in this sensitivity, repeat the same song hundreds of times in rapid succession are chiefly members of the more "primitive" orders. An example is the Whip-poor-will *(Caprimulgus vociferus)*, a nightjar who for many minutes together proclaims his name over and over with scarcely a pause. Perhaps his main interest is something other than the sounds he emits. The anti-monotony principle, which I believe Hartshorne was the first to recognize, certainly the first to develop, bears importantly upon the question of whether birds are aesthetically sensitive.

In the bird's ability to vary unpredictably the order of the songs in his repertoire, the number of times each is repeated, and the intervals between them, Hartshorne sees an example of the freedom, or indeterminacy, that he believes pervades all nature. These variations in the singer's performance are due to no external compulsion. Within the limits of the bird's repertoire, he is evidently free to sing as he pleases, just as we are free to choose between alternatives open to us. But if our choice were not determined by our character and needs, in relation to our opportunities, would we not more frequently make choices that we later regret? Perhaps the bird's song would be less satisfying to himself if it were not determined by factors within himself. With these brief remarks, we must dismiss a problem beyond the scope of this chapter.

Imitativeness, or the capacity to copy sounds, enters largely into Hartshorne's appraisal of bird song. It is one of the six features by which, on a scale of one to nine, he assesses the quality of songs. At one point in *Born to Sing* (p. 226), he declares that his principles would make him hesitate to designate as song the utterance of a bird with no capacity to learn sound production by hearing others sing. Elsewhere he wrote: "Perhaps we may go so far as to say that if birds

ever act intelligently, they do so when imitating sounds and when improving their little musical patterns by practice."[4] However, birds, at least those that build the more elaborate nests, improve their productions by practice, as Nicholas and Elsie Collias demonstrated in the Village Weaver *(Ploceus cucullatus)*, so that, by the same criterion, this, too, must be viewed as intelligent behavior.[5]

Degrees of imitation may be recognized among birds. Their simple calls, including alarm and location notes, appear to be wholly innate, as are the less complex, but often enchantingly melodious, songs of some of the more "primitive" orders. The more elaborate songs of Oscines often contain an innate component that is polished and perfected in youth by hearing and copying older individuals of the same species, often their fathers, or even their contemporaries. We do not, as a rule, call these birds mimics, a term reserved for the minority of birds, including mockingbirds and mynahs, with a lifelong capacity for imitating sounds from a wide variety of living and lifeless sources and incorporating them in their vocal performances. This capacity undoubtedly reveals alert interest in sounds as such, regardless of their significance, and in perfecting their reproductions.

Although we admire the virtuosity of the accomplished mimic, his medley of liquid and harsh notes, trills, and chatters, often appearing to be thrown together at random, is hardly music of the highest order. He amuses us, and challenges us to identify the originals of his reproductions, but he often fails to move us deeply. If the true function of art is to stir exalting emotions, and the highest art is that which does this with the simplest means, then the simple purity of the notes of certain birds placed low in our systems of classification, such as the tinamous, is higher art than the flashy display of vocal flexibility in which mimics sometimes indulge.

Parrots are famed for their ability to imitate the human voice and other sounds, and we wonder why what we chiefly hear from them in the wild is harsh chatter and raucous calls. Many, perhaps most, species remain in pairs throughout the year. Mates appear to be bound together by sharing the same notes, different from those of other pairs in the flocks in which they usually travel, and which they learn from their partners. In captivity they learn from human companions words or brief phrases that sometimes they use in appropriate contexts, as when they say "Polly wants a cracker," or "Good morning"; but on the whole they are reputed to speak without understanding. Probably this is because we do not know how to teach them. When, instead of simply offering them words or short sentences to copy, their tutors demonstrate the meaning of a phrase by acting it with them, their learning is vastly improved. By such "social modeling," Irene Pepperberg taught an African Gray Parrot *(Psittacus erithacus)* to employ English words to request, refuse, identify, categorize, or

quantify more than sixty items, to signify its wishes by phrases such as "come here," "I want x," and "wanna go y," and to refuse by saying "no."[6] We have hardly begun to probe the depths of the avian mind.

This brings us to the third and, I believe, most important aspect of Hartshorne's study of bird songs, its contribution to a philosophy of nature. His answers to the questions "Do birds have an aesthetic sense?" "Do birds enjoy their singing?" appear at first glimpse to have quite limited relevance, but, more profoundly viewed, they introduce us to a major problem of cosmology.

To demonstrate, as our author does, that birds' songs are not only beautiful but may properly be called music, does not prove that birds have aesthetic feeling. Flowers are beautiful, but we do not suppose that the plants which bear them have aesthetic sensibility and consciously design them. Bird song, for all its similarity to human music, might, conceivably, be an expression of the widespread tendency in the natural world to arrange its components into harmonious patterns, which I have called "harmonization."[7] Examples of such patterns are crystals (e.g., snowflakes), planetary systems, the filigree elegance of a tree-fern's leaf, the melodious song of a bird. Can we be certain that, unlike the other patterns, the last reveals aesthetic sensibility?

Before tackling the question of whether birds have aesthetic feeling and enjoy their songs, we must clarify the relation of art and its enjoyment to utility. It has commonly been assumed by the uncritical that birds sing when they are happy or contented. More than half a century before Eliot Howard published his classic *Territory in Bird Life*, Bernard Altum recognized the function of song in proclaiming possession of territory and attracting a mate. Falling into the far-too-common error of single-factor explanations, he denied that feeling entered into the exercise of this biologically necessary activity.[8] Would anyone maintain that because gardening, or cooking, or raising children are indispensable for the support and continuance of human life, one can find no pleasure in these occupations? Art and utility are not antithetic but complementary. The more useful an article that lends itself to decoration, the more likely it is to be embellished. Societies that lacked museums where works of art of no practical value might be exhibited, or houses with walls suitable for frescos or hanging pictures, lavished their artistic impulses, and expressed their aesthetic taste, by adorning their ceramics, so indispensable in their simple economy. Undoubtedly they found great satisfaction in molding and painting their artifacts of clay. To suppose that utility and aesthetic pleasure are incompatible is shallow thinking.

Hartshorne does not fall into this error. He sees no conflict between "birds sing for pleasure" and "they sing to maintain territory and attract mates." The more essential an activity is in the whole life of a bird, the more pleasure it is likely to find in it. This is in accord with evolutionary theory for, granted that

animals feel, and that pleasant feeling reinforces the activity that engenders it, the more vitally necessary the activity, the more natural selection should make it a source of pleasure. Accordingly, we find that birds who most need song, especially those who can depend least upon visual communication because they live amid obstructing vegetation, and those that defend extensive territories, have developed the most elaborate and pleasing songs. Just as people like to hear themselves talk, birds seem to enjoy, most of all, hearing themselves sing. We would expect birds with the most pleasing songs, and the most exacting aesthetic sensibility that apparently accompanies its production, to sing most in a year, as Hartshorne tried to demonstrate. Unfortunately, because of the incompleteness of his data, the demonstration was not quite convincing.

It has been asserted that if birds have an aesthetic sense they should cluster around the finest singers to enjoy their performances. This overlooks the perils to which birds are exposed and the functions of their songs. While absorbed in listening to a superior performance, a gathering of birds might be too easily surprised by a raptor. A bird singing to assert his determination to defend his territory certainly would not permit another male of his kind to enter it, the better to hear his melodious notes. However, songbirds who have settled their territorial boundaries and dwell in peace with their neighbors may well enjoy singing back and forth with them, often copying all the intonations of their songs in a sort of vocal duel. "It is a stupendous fact about nature," Hartshorne wrote, "that the territorial disputes of thousands of species are something like artistic contests—song duels. The struggle is mainly musical (countersinging), not pugilistic. If only human beings could do so well!"

For the Neo-Darwinian evolutionists now predominant in biological circles, the measure of an organism's fitness is the number of viable offspring that it produces. Nothing else ultimately counts. Individuals of a species are engaged in an unremitting contest to produce the greatest number of descendants, for the most prolific lineage will eventually supplant its competitors. The thoughtful person who contemplates the long, harsh course of evolution will always ask, To what end all this strife and carnage, all this destruction of individuals, all this extinction and creation of species? What is gained by it? To answer this question, one must look to the psychic realm, for unless creatures find some satisfaction, some joys or values in their existence, it can make no slightest difference to them whether they live or cease to be. All their frantic efforts to multiply insentient creatures intrinsically incapable of finding the least satisfaction in their lives are wasted endeavor. As an objective science, biology would exceed its self-imposed limits if it tried to answer the question. It can minutely describe the structure of organisms, tell how they grow and reproduce and interact with each other, give a plausible account of their evolution, but it cannot find the slightest value, to themselves, in the lives of the creatures it studies.

When science reaches the end of its tether, philosophy must carry on. If there be significance and meaning in human life, or in the wider living world, it is the task of philosophy, not of science, to discover it. From its flowering in ancient Hellas, a major endeavor of philosophy has been to identify the true values available to humans, and to guide them in the realization of these values. Increasingly in recent times, philosophers, and philosophical biologists, have broadened the scope of this inquiry to explore the psychic lives of nonhuman animals, especially those highest in the evolutionary scale, birds and mammals, and to ask what experiences might enrich them. This is a hazardous undertaking, for we cannot demonstrate to the skeptic's satisfaction that these animals are conscious in the least degree. All we can say about them—or our fellow humans—is that they behave as though they feel and think; and we intuitively attribute consciousness to them.

Instead of vaguely asserting that animals as highly organized as birds, or dolphins, or elephants, or chimpanzees must certainly feel rather keenly, we do well to examine particular facets of their lives, such as their parental behavior, their social relations, their play, or their singing for indications of emotion or feeling in these contexts. Hartshorne has given us sound reasons for believing that birds aesthetically enjoy their singing. These reasons do not amount to unassailable proofs; but when we reflect that we cannot rigorously prove that our brothers are conscious, we will not lightly reject his arguments. I would go so far as to say that if gifted singers experience no gleam of pleasure in their singing they are not likely to find satisfaction in other aspects of their lives, in which case their evolution would have been a barren reorganization of matter, accomplishing nothing of importance. For it would be absurd to suppose that creatures who inhabited Earth so many millions of years before man appeared were created solely for his delectation.

Studies such as Hartshorne's *Born to Sing* and Donald Griffin's *The Question of Animal Awareness* help to exorcise the Cartesian specter of animal automatism, which lurks so stubbornly in certain minds, and has had such baneful consequences for nonhuman creatures. I marvel that any philosopher could have promulgated such a dogma, for we can as little disprove that animals feel as we can prove that they do, and there are more reasons, from analogy, from the continuity of evolution, from behavior, for preferring the second alternative.

A major concern of Hartshorne's philosophy has been values and their preservation. In *Born to Sing* he has felicitously wedded his philosophical and ornithological interests. By giving cogent reasons for believing that not only we who hear the songs of birds but they who sing them find aesthetic value in them, he makes feathered creatures seem close to us. For value is experienced only by beings that are conscious or feel. A universe devoid of feeling, therefore of

value, no matter how many galaxies, stars, and planets were scattered through the vastitude of its space, would lack importance; its annihilation could cause no decrease of value, already at the zero point. The more reasons we have for believing that feeling and value are widely diffused through the cosmos, not only in living beings but perhaps, in a minor degree, in nonliving matter, the less alien it appears to us, the more it appears a congenial abode for us who enjoy, suffer, and aspire. And certainly the most promising place to begin the exploration of values beyond mankind is among creatures that have most in common with ourselves, especially the birds that, after man, are the most accomplished musicians in the animal kingdom—as Charles Hartshorne has done so well in his study of bird song.

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COSTA RICA
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NOTES

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2. Edward A. Armstrong, Review of *Born to Sing*. *The Ibis* 116 (1974): 239–240.
3. Edwin G. Boring, *The Physical Dimensions of Consciousness* (New York: Dover Publications, 1963), pp. 135-136.
4. Charles Hartshorne, "The Relation of Bird Song to Music." *The Ibis* 100 (1958): 421–445; p. 435.
5. Nicholas E. Collias and Elsie C. Collias, *Nest Building and Bird Behavior* (Princeton, New Jersey: Princeton University Press, 1984), p. 216.
6. Irene M. Pepperberg, "Social Modeling Theory: A Possible Framework for Understanding Avian Vocal Learning," *The Auk* 102 (1985): 854–864, p. 856.
7. Alexander F. Skutch, *Life Ascending* (Austin: University of Texas Press, 1985).
8. Ernst Mayr, "Bernard Altum and the Territory Theory," *Proc. Linnaean Soc. N. Y.*, nos. 45–46, 1933–1934.