Chapter 2

Carl Stumpf: A reluctant revolutionary

David Trippett

If historical events are to mark the boundaries of a life lived, one could be forgiven for suspecting that Carl Stumpf (1848–1936) might have been a political revolutionary: born during the months of revolutionary uprisings across Europe, he died a few months after Hitler’s troops occupied the Rhineland in violation of the Treaty of Versailles. Yet, as a scientist, his convictions carried no muscular force; still less any political conviction. His sphere was intellectual. Though, as we shall see, this would prove no less influential in charting the course of the disciplines of psychology and (ethno)musicology, than the events that framed his life would serve to alter the course of European history.

Stumpf came from a family of doctors and acknowledged in 1924 that a central portion of his professional life was devoted to bridging his early love of music and his familial inclination towards the natural sciences. Between 1875 (with his work on the *Psychology of Tone*) and 1911 (when he published *The Origins of Music*) he investigated the phenomenon of sound as a stimulus at once physical, physiological, and psychological, i.e. something following the laws of Newtonian physics, operative within the functions of the brain, and hence traceable within the more opaque realm of the mind. Music, as the perception of sound configurations cultivated by people, thereby effected Stumpf’s theories of sensation, perception, and cognition. With his 1911 hypothesis about the prehistory of music, Stumpf added a historical dimension to this study, one that is influenced by, though also differentiated from, Charles Darwin’s evolutionary theory first documented in *On the Origin of Species* (1859). This had been on the shelves for more than sixteen years when Stumpf
first began his studies into acoustics, and had already proven itself more than faddish, having gone through six editions by 1872.

Yet within this nexus of music and psychology—for which Stumpf is predominantly remembered today—it is easy to overlook his grounding in Plato and Aristotle, which, for William James, made him one of ‘the most philosophical and profound of all … writers’.1 Indeed, it is arguably the recursive inclination towards philosophical reasoning in Stumpf’s thought that first drew him to Franz Brentano, who had argued that ‘true philosophical methods are none other than those of the natural sciences’, as Stumpf once put it.2 By collapsing the distinction between disciplines on the basis of their shared methodology, this stance rested on the foundation of an enduring epistemology that governed the humanities as much as the hard sciences. This, for Stumpf, ‘was and remains a guiding star for me’.

Inevitably, the degree of abstraction occasioned by this philosophical foundation had certain consequences. In 1911, Stumpf’s argument about the historical development of music can seem dislocated from the modernism of his age. That very year saw the premiere in Paris of Stravinsky’s ballet *Petrushka*, whose polyrhythmic textures and irregular, changing metres capture the cardinal elements that Stumpf diagnosed in indigenous musical cultures less developed than that of the musical West. The year 1911 also witnessed the premiere of Richard Strauss’ opera *Der Rosenkavalier*, whose equally complex tonality borders on the polytonality that Stumpf ascribes to an underdeveloped appreciation of harmonic function. To say that influence works both ways (from indigenous musics to Western classical music, as well as vice versa) would be unduly simplistic here; it is rather the artistic diversity within modernism, and its experiments in exceeding the limits of traditional art music, that highlight the strictness of the criteria Stumpf uses to determine musical elements in other cultures: pitch, interval, metre, patterning, and form.

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2 See this volume, 192.
As Stumpf’s careful comments in Part II of *The Origins of Music* show, the distinctions between detuned pitches and non-diatonic pitches, between stable rhythmic patterning and disorganized ensemble playing, rely on the musicians’ intent as determined by consistency across multiple performances. A case in point is the use of quarter tones. Alois Hába’s quarter tone suite for string orchestra would appear barely six years after *The Origins* differentiated between the wavering of pitch and what in 1911 was still the ‘theoretical’ concept of microtones, albeit one with a number of historical anticipations in the nineteenth century. In tandem with Hába’s suite, Willi von Möllendorf’s *Music with Quartertones* (1917) would argue that the expressive potential of diatonic and chromatic harmony had been exhausted, and that in order to continue towards ever richer means of expression the number of scale steps must be doubled by using quarter tones. Of course, Stumpf was speaking about music from a conservative late Romantic epoch, not the experimental avant-garde, but the context of his study indicates that his criteria for tracking music’s origination were Janus-faced. Some non-tempered pitching in indigenous musics is precise, just like the ancient Greek theory of an enharmonic genus of tetrachord or Hába’s suite, but some pitching is imprecise, accidental, and hence indicative for Stumpf of a ‘primitive’ or intermediate stage in the development of music. The question is: which is which?

### 2.1. Legacy

The technology available to Stumpf to help in making such judgements was itself ‘primitive’ by modern standards. The rotation speed of Edison phonographs was variable, often driven unevenly by a crank handle, and before the use of copper negatives, the runic grooves written into the wax cylinders steadily degraded with multiple playing. (This was the Heisenberg problem of the earliest recordings: the more one listens to a cylinder, the less what is heard can be taken to be accurate.) It meant

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that even where original recordings were available to Stumpf, their condition and absolute pitch (coupled to tempo) remained in doubt except—putatively—in cases where an identifiable pitch pipe was used. Yet the legacy of the Berlin Phonogram Archive, which Stumpf tasked Otto Abraham with running within the larger Psychological Institute he officially founded at Berlin University in 1900, has endured and is now part of UNESCO’s Memory of the World Register. It was this collection of recordings that provided an institutional basis on which to develop comparative methods in the study of music. And it was Stumpf who ensured that comparative musicology received certification as a legitimate discipline within the university. Following the flowering of comparative studies of music during the 1930s under Erich von Hornbostel, systematic approaches to music have survived to this day. Their practitioners have also retained the optimism attendant on new technologies. As recently as 2004 the editors of a broad study of empirical methods in music issued the rallying cry that ‘musicology is or could be, in many instances, a significantly “data richer” field than we generally give credit for’. While this may seem a long way from the philosophy of origins or Ursprungsphilosophie that preoccupied so many late nineteenth-century writers wherein ‘the origin . . . is a past moment that bestows truth on the present’, the rationale of providing a justification (auctoritas) for our current understanding of our own culture remains the same, where empirical, comparative studies and the search for cultural origins become two sides of the same coin.

### 2.2. Contemporary discourse

To be sure, Stumpf was not alone in contributing to the growth and formation of comparative musicology. And given the weave of ideas

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binding leading experimental researchers together, it is not surprising that the ideas of others are traceable in Stumpf’s own text. To take one example, Graf views the appointment of Richard Wallaschek (1860–1917) as an associate lecturer at Vienna University in 1896 as the official inauguration of comparative musicology. Wallaschek, a contemporary of Guido Adler, made extensive comparisons between ethnic instruments in *Primitive Music* (1893), yet Stumpf remained sceptical of his search for the beginnings of music in the need for rhythmic forms within communal singing and dancing. Nevertheless Stumpf’s admission in Part II of *The Origins* that metrical groupings can legitimately be conceived (and transcribed) differently indicates a certain point of agreement with Wallaschek, who argued that ‘time-sense is . . . a mental work of grouping the sensations, and this takes place not in the senses themselves but in the cortex’. Hence the process of rhythmic grouping becomes a ‘cortical process of group perception’. Because our sense of time is cognitive rather than sensory—i.e. not inherent in the music as such—different individuals can hear different metrical groupings while listening to the same metre. This is a problem for putatively objective transcriptions, particularly when migrating non-Western music into Western notation. Stumpf’s rationale for selecting changing metres (where necessary) is that ‘it is better to use this aid where it works: the division of accents given by the bar structure makes an overview of the whole structure easier, extraordinarily so’. Thus his decisions about metre ultimately relate to pattern recognition as a prerequisite for the perception of a synoptic structure in indigenous musics.

Another influential figure for Stumpf is the psychologist and philosopher Christian von Ehrenfels (1859–1932), whose early writings on ‘gestalt qualities’ found music to be a particularly good example; while Stumpf never saw himself as a gestalt psychologist and even criticized Ehrenfels for his terminology in this field, some of their ideas

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9 See this volume, 109.
overlapped. Ehrenfels pointed out that when a melody is transposed to a different key, it is heard as being identical to the original melody, even though the two have an entirely different set of pitches. Thus, the perception of a melody is more than the perception of its individual parts, he proposed. A melody is, therefore, a gestalt quality. For Stumpf, the ability to transpose a melody distinguishes human from animal musical faculties, underscoring his argument that it is the relationship between pitches (intervals) as such, and not the melody as defined by its absolute pitches, that signals the richer human appreciation of sonic forms.

For Stumpf, of course, these intervals were predominantly the perfect consonances (octave, fifth, and fourth), whose transposition indicated an appreciation of consonance *sui generis* among humans. But thirty years before Stumpf’s lecture on *The Origins*, at least one writer investigating ‘animal music’ had already suggested that the overtone series played a determining role in ‘primitive’ musical forms. Whereas Stumpf extracted consonant dyads from the overtone series, the American philosopher Xenos Clark had argued in 1879 that the intervals of linear melodic structures are determined by the harmonic structure of overtones, which has ‘in some way impressed itself upon the auditory mechanism’ over time. As a result, Clark summarizes, the ‘physical peculiarities of vibrating bodies [that existed] long before any living being came upon the earth, are also the basis of human and . . . extra-human melody’. While Stumpf was sceptical, disbelieving even, of Clark’s transcriptions of diatonic bird scales, sparks had been flying for some time—so to speak—between overtones and musical forms in the discourse of musical origination. Hence this linkage could support increasingly bold claims, the most long-standing of which arguably

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belonging to Stumpf with the concept of Verschmelzung (translated throughout this book as ‘fusion’).

2.3. Fusion

The concept of fusion is first advanced as a hypothesis in the second volume of *Psychology of Tone* (1890): two tones are perceived as a single entity; their degree of consonance, by Stumpf’s definition, depends on the integer ratios of their frequencies. In descending order, these intervals are: the octave (1:2), fifth (2:3), fourth (3:4), major third (4:5), and minor third (5:6), though it is only the first three, the so-called perfect consonances, with the simplest frequency ratios, that Stumpf looks for within his transcriptions of non-Western musics. He broached the concept in the first volume of *Psychology of Tone* (1883) with the notion that our initial judgement or analysis of an interval is not an analysis of the two constituent tones, but of the sound as a whole, i.e. where an interval becomes a mental representation based on sensations.

At root, the theory links intervals to ideas of universality, where perfect consonances become, in effect, metaphors for fundamental truths about music and the human race. The intuitive attraction of a theory of music’s origination via consonant signalling (the enhanced vocal cries of simultaneous sustained pitches that led to the perfect consonances) has ensured that Stumpf’s theory is regarded to this day as markedly more plausible than most.⁴² (By analogy, Richard Wagner had presented the poetic side of such a theory in 1854 by using the perfect consonances to depict the origins of the world in the opening bars of *Das Rheingold*, even if he also admitted the fifth partial, the major third, in his sonic vision of our mythic prehistory.)

Stumpf presumes fusion to be immanent in music. It is based on both the physical reality of acoustics and the physiological reality of ‘brain processes’, i.e. carefully distinguished from Helmholtz’s reliance of the structure of the inner ear, which famously gives a Fourier analysis of

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compound sound waves.  But, as Rehding points out, it remains unclear whether fusion is physiologically innate or an aspect of external reality, a telling ambiguity given the weight placed on this phenomenon for his theory of music’s origins. Indeed, it is a concept that links hard acoustic science to cognitive psychology, forming a critical bridge between mind and matter, or as Stumpf characterizes his study: ‘the cognitive penetration of matter’.

Stumpf’s classical leanings are revealing here. His essay on pseudo-Aristotelian problems about music (1897a) clarifies that the concept of fusion is expressly borrowed from Aristotle’s discussion of the octave in *De sensu*, where the two notes ‘are not exactly homophonous but only analogous to each other.’ Here again, Stumpf distinguishes mental from physical elements, arguing that ‘this mixture or fusion of simultaneous sounding is common to all consonance according to [almost all writers on music from antiquity], and characterizes its constitutive property in a psychological sense, while the frequency ratio does so in a physical sense’.

But where did this distinction originate for Stumpf? During his early doctoral work on Plato, he reports that he was ‘tormented’ by difficulties arising from Aristotle’s critique of the theory of forms, proposing that the very name ‘form’ should be banned from metaphysics. Might the consonant dyad serve as precisely such a problematic form? Stumpf’s familiarity with Plato gave rise to the application of the term ‘heterophony’ to the looping of simultaneous melodic paraphrases in indigenous musics, and so there may be good reason to return, via

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14 Rehding, ‘The quest for the origins of music in Germany circa 1900’, 354.
17 Ibid., 7.
Aristotle, to the subject of his doctoral ‘torment’ for the deep context of fusion.

The celebrated section in Plato’s *Republic* on educating philosopher kings distinguishes sensations that inspire thought from those that do not. This, it would seem, offers a prototype for the concept of fusion as that perception of two separately sensible sounds, fused as one indistinguishable sound, where the sound retains both its compound and its singular identity. Since not everyone agrees that Plato even has what can properly be described as a theory of forms, let alone an accurate conception of what this theory would be, it is worth quoting Plato’s explanation of this specific instance of form at length:

I’m sure you’ll see what I mean if I say that at the level of the senses, some things don’t encourage the intellect to explore further, because the situation can be adequately assessed by the relevant sense, while other things can’t help provoking an enquiring attitude, because sense-perception fails to produce a sound result. . . . [I]n order to count as thought-provoking . . . they have to produce contradictory sense-impressions at the same time; otherwise, they aren’t thought-provoking. The impression sense-perception has to give of an object is that it is no more X than the opposite of X, however close or far away it is when you encounter it. . . . I mean, here’s how each sense works: the main point is that the sense into whose domain hardness falls is inevitably also the sense into whose domain softness falls; and the message it passes on to the mind is that, in its perception, the same thing is both hard and soft. . . . It makes sense to suppose, then . . . that these are the circumstances in which the chief thing the mind does is summon up calculation and thought to help it examine whether in any given case it’s being informed about one object or two objects . . . If each of them is single, then, and it takes two of them to make two, then it’ll think about them as two separate objects. I mean, if they were inseparable, it wouldn’t be thinking about two objects: it would be thinking about one object. . . . [S]ight sees both big and small as a kind of mixture, not as separate from each other . . . and in order to clarify the situation, the intellect is forced in its turn to look at big and small as distinct entities, not mixed together, which is the opposite of what sight does.

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Following Aristotle’s analogy between visual colour mixtures and consonant tones, if we substitute sight for audition here, this would seem a lucid, if abstract, explanation for the phenomenon of a dyad heard as a single entity (owing to its ‘consonant’ frequency ratio) but intelligible as two separate pitches. It is beside the point whether or not Stumpf had this particular passage in mind while exploring Aristotle’s theory of octave pitches. In any case, the metaphysical difficulty of a form that is not consistently identical with itself, potentially even existing in a state of self-contradiction, plays no part in Stumpf’s fusion; the outline of the concept nevertheless offers a blueprint for a phenomenon at once acoustic and mental, i.e. one that endlessly solicits cognitive persistence. The pleasure that Stumpf finds in perfect consonances acts as a catalyst for the historical development of consonances among primordial humanity. This, again, is supported by an argument arising from Wallaschek’s neurological research during the 1890s (into language and music in patients with aphasia), namely that emotion and intellectual activity are differentiable, separate brain processes.

2.4. The phonograph

The corollary to holding metaphysics in abeyance here is a turn towards materialism and positivistic investigation. In a lecture in 1907 Stumpf recounted how materialism supplanted Hegelian idealism to become the dominant philosophy of the second half of the nineteenth century. (Many writers deemed this a ‘catastrophe’, he added, that signalled the end of philosophy as such.) Against this traffic, music continued to retain its metaphysical identity in many circles. But from 1877, Thomas Edison’s phonograph ensured that the new scientific perspective directly and irreversibly challenged the special character of sound. By capturing the fleeting

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moment, the recording apparatus reified musical practices as never before, making performances scrutable by quite literally objectifying the moment in wax (though, until the use of copper negative—as noted above—this was never as permanent as its concept might suggest). Ironically, the new technology only underscored the impermanence of life and art, becoming at once a means of storing time and a signifier of transience. In 1878, for instance, Edison recommended capturing the dying words of relatives along with treasured family mottos. It is perhaps no coincidence that part of Stumpf’s rationale for establishing an archive of phonographic recordings in 1900 was that the opportunity to record music pertaining to ‘originary conditions . . . will shortly have been lost forever through the modernization of primitive peoples’. Treating present-day indigenous tribes as sources for accessing the evolutionary past was common enough during the later nineteenth century, but the phonograph served to highlight their status as the final living trace of tantalizingly impermanent developmental stages. To be sure, technology for transcribing sounds had been in use since 1857 with Édouard-Léon Scott de Martinville’s phon-autography, though this lacked any form of playback mechanism at the time, becoming merely another means of acoustic writing.

In a sense, the phonograph transformed the young discipline of musicology from a data-poor to a data-rich field, where data (hard evidence) are distinct from facts (the interpretive criteria extrapolated from data for purposes of historical assessment). In the same vein, the new ‘cents’ system formally put into practice by Alexander Ellis (1814–1890) in 1885 presented a means of determining pitch by dividing the equal-tempered semitone into 100 equal logarithmic units, i.e. more precisely than human ears could detect. This materialist turn and its embrace

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24 See this volume, 33.
25 Martinville’s scientific papers are housed at the archives of the Société d’encouragement pour l’industrie nationale, Paris, and are also available online: http://firstsounds.org/features/scott.php [accessed 15 March 2012].
of empiricism is predicated on the dependence on objects of research, whether wax cylinders, tonometric instruments and the transcriptions of explorers, or the vocal organs and brain processes of indigenous musicians. Viewing the body as the product of evolutionary biology did not entail a loss of inner life, however. The knowledge won by research in physiology and anatomy did not void the human form of spiritual or mental attributes. It is worth recalling that Stumpf trained at a seminar and remained a Christian throughout his life. It took an egregious insult from a priest for him finally to sever all ties with the Catholic Church. Thus, the physical body was not merely a complex machine in an atheistic universe, and we might liken Stumpf’s investigations into the processes of cognition to what Andreas Daum has called ‘strategies for enchantment’ in the discourse of nineteenth-century science, for in the rise of psychology they present a counter-narrative to the view of humanity’s desacralization as a linear process against the growth of atheistic materialist thought.

The continuing relevance of Stumpf’s work is evident both in the ongoing digitization of his archive, which swelled to some 30,000 cylinders dating from between 1893 and 1954, thereby bestowing a new degree of permanence on the collection; and in the recent re-emergence of comparative approaches to music via new technologies such as recording analysis software, e.g. Sonic Visualiser, which allows digital recordings of the same piece to be compared with a degree of precision unavailable to the naked ear. Such comparative investigations have increasingly become part of modern performance studies, whose subject

27 See this volume, 218.
is far from restricted to Western art music.\textsuperscript{31} The fleeting references to Beethoven’s Ninth and Brahms’ First symphonies in Stumpf’s 1911 text indicate that he viewed the German musical canon as one musical culture among many in the world, albeit the most developed. It would arguably take another eighty years for mainstream research within historical musicology to accept the implications of this comparison with emphatic declarations such as: ‘We are all (ethno)musicologists now’, underscoring the fact that the methodologies established by Stumpf’s \textit{Origins of Music} continue to enjoy a rich afterlife.\textsuperscript{32}

Finally, a few words on this translation. Stumpf’s German is flowing and clear, with moments of joviality; I have sought to replicate that balance in my translation. Part I of \textit{The Origins of Music} was originally a lecture, to which Stumpf appended thirty-two endnotes. For the convenience of the reader I have filled out all references to academic literature, however brief, to include year of publication, publisher, and all volume numbering and pagination; I have also supplied forenames for researchers whom Stumpf references only by surname. For clarity, I have provided example numbers in chapters 3 and 4, and have made very minor adjustments to Stumpf’s text in order to accommodate this numbering. Editorial comments, where necessary, are included as footnotes. Stumpf also occasionally added his own footnotes, however. In order to differentiate his footnotes from editorial footnotes, all notes by Stumpf are denoted by [SN], and all in-text references he gave have been normalized as footnotes with the designation [SR].

\textbf{Acknowledgement}

I am grateful to Karola Obermüller for her generous assistance with parts of this translation.

\textsuperscript{31} A recent example is Nicholas Cook, Eric Clarke, Daniel Leech-Wilkinson, and John Rink (eds.), \textit{The Cambridge Companion to Recorded Music} (Cambridge: Cambridge Univ. Press, 2009).

\textsuperscript{32} Nicholas Cook, ‘We are All (Ethno)musicologists now’, in \textit{The New (Ethno)musicologies}, ed. Henry Stobart (Lanham, MD: Scarecrow Press, 2008), 48–70.
Section II

The origins of music (1911)

By Carl Stumpf

Preface

This book is based on a lecture delivered at the Urania in Berlin.¹ The previously published text is elaborated here: notes have been added pertaining to scholarly explanation and substantiation of individual points, there are also numerous reliable examples of primitive melodies with technical analyses, and finally, some illustrations of primitive instruments.

The ethnological study of music has frequently occupied my time over several decades and the arrival of the phonograph has served to increase this further. I wanted to summarize the fruits of this work for experts and for a wider audience. This would not have been possible without the help of my young assistants at the Berlin Phonogram Archive, and above all without the help of [Erich von Hornbostel] to

¹ Stumpf gave his lecture on 24 November 1909 at the Urania, a public educational institute founded in Berlin by Wilhelm Foerster, Wilhelm Meyer, and Werner Siemens in 1888. The original lecture text is published as ‘Die Anfänge der Musik’ in Stumpf, Philosophische Reden und Vorträge (Leipzig: J. A. Barth, 1910), 225–261.
whom this treatise is dedicated. There is no line we did not discuss, no melody he did not check note for note. I can only leave this little book with the wish that it will shortly be superseded by a comprehensive work in his hand.

In addition to him, I must gratefully thank Erich Fischer for his assistance with the troublesome transcription of several phonographic recordings that remain unpublished.

Berlin, April 1911, C. Stumpf

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2 Erich Moritz von Hornbostel (1877–1935) was Stumpf’s assistant at the Berlin Psychological Institute, and became the first director of the Berlin Phonogram Archive in 1905. For a study of Hornbostel’s work, see Sebastian Klotz (ed.), “Vom tönenden Wirbel menschlichen Tuns”. Erich M. von Hornbostel als Gestaltpsychologe, Archivar und Musikwissenschaftler: Studien und Dokumente (Berlin: Schibri, 1998).
Chapter 3

Part I: The origin and archetypes of music making

Over the course of many millennia the human race has brought about developments in language, science, art, and in ethical, social, and technical practice, which raise the question time and again of how all these glorious things have arisen, and what divine spark—glowing inconspicuously at first—gradually kindled this wealth of light. Without wanting to delve deeper into the depths of human nature here, or even into metaphysical secrets, I want to try to get closer to the question of the origins and first manifestations of music, using the experiences and knowledge afforded us by today’s ethnology, comparative musicology, and experimental psychology.

This will always be a matter of hypotheses. But we are better equipped to put forward credible hypotheses today than our predecessors. While Rudolf Virchow\(^3\) complained as early as 1886 that the lack of any interest in the prehistory of music was the single unmitigated gap in the efforts of Berlin’s Anthropological Society—a degree of apathy excused by the scarcity of reliable material—Heinrich Waldeyer\(^4\) in 1903 could characterize as a field of undreamt-of dimensions and significance the research in this area enabled by a new aid, the phonograph, and by the measuring of exotic instruments. Indeed it is imperative now to raise an inventory of everything still available from originary conditions. Unless we arrange a systematic collection and safe-keeping of documents through which we can visualize the dim and distant past, the modernization of

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\(^3\) Rudolf Virchow (1821–1902) was a German anthropologist and biological pathologist, who founded the field of cellular pathology.

\(^4\) Heinrich Wilhelm Gottfried Waldeyer-Hartz (1836–1921) was a nationally celebrated anatomist and pathologist; he held university appointments at Breslau, Strasbourg, and Berlin.
primitive peoples and the extinction of many tribes means that the opportunity will soon have been lost forever. Even the material at hand, however, allows the outlines of primitive musical practice to be seen far more clearly than before.\(^1\)

### 3.1. Recent theories

Let us first recall briefly, and with some critical remarks, the hypotheses that have recently been put forward concerning the origins of music.\(^2\)

#### 3.1.1.

According to Darwinian doctrine, in which all advance must be understood essentially from the principle of natural selection or survival of the fittest, music initially forms a curious anomaly. Saint Cecilia looks aloft to heaven—how does she help us in the struggle for existence? Her disciples certainly earn plenty of money from time to time; some earn a living playing the piano with their well-trained fingers. For the majority of people, however, the indefinable, abstract structures of air [Luftgebilde] that we call music are not connected to the real utilities and needs of everyday life.

Nevertheless, Darwin had a suggestion. His solution can be expressed with the words: ‘In the beginning was love’; admittedly not the heavenly kind, but earthly, sexual love. Males endeavoured to please females, and females selected the one who offered the greatest advantages. Just as the males who are considered the most beautiful in terms of build and colour have always been selected, so also the best singers or wailers. Hence, in animals we find the male sex more colourful and fond of singing. Among humans, initially only males were productive artists, but females added critical discernment. Nowadays both genders sing and play, the female almost more than the male. But, indisputably, men still remain more musically productive, and ‘sweet love thinks in sound’—that applies today just as it did in ancient times.

Admittedly, great difficulties arise if one goes into details. I do not want to dwell on the facts that birds also often sing outside periods of courtship; that their calls may also be signals for other purposes, or mere expressions of a general awareness of life; that animals closer to
humans do not sing, but only utter harsh cries; and finally, that the songs of primitive peoples are in fact not predominantly love songs, but are in the majority of cases military, medical, and religious songs. I only wish to examine one point—a crucial one nonetheless—a bit more closely.

Music is not the mere production of tones, but rather the production of certain arrangements of tones, however simple they may be. It is an absolutely essential feature of music in the human sense that these arrangements can be recognized and reproduced independently of absolute pitch. A melody remains the same whether it is sung by a bass or soprano, whether in C or in E. As far as we know, we find this capacity to recognize and to transpose melodies universally among primitive peoples. An Indian or a South Sea islander does not mind beginning his song a little higher or lower; so long as it is comfortable for his vocal range, he pitches the intervals just the same. For the purposes of phonographic recordings a small pitch pipe is blown as prescribed into the recording horn by explorers, in order later to be able to reproduce the original speed of the cylinder, and hence the pitch and tempo of the song. In the process, it was observed that the native singers frequently adjusted the intonation of their song to the pitch of the little pipe.

So what about animals? To my knowledge it has not previously been observed that a bullfinch or starling to whom one has taught a particular melodic motive, say ‘Morgen muß ich fort von hier’ [tomorrow I must leave this place] or ‘Dein ist mein Herz’ [my heart is yours], has ever repeated these illustrations in a different key, be it merely a whole tone higher or lower, during its many hours of leisure, although its vocal apparatus would allow it to do so.\(^5\) Otto Abraham\(^6\) carried out

\(^5\) ‘Morgen muß ich fort von hier’ is a seventeenth-century folk song recorded in the Arnim / Brentano collection Des Knaben Wunderhorns (1808); it was set to music by Johannes Brahms (WoO posth. 38 no. 17), Wilhelm Goldner (Op. 7 no. 2), Friedrich Silcher, and Max W. K. Vogrich. Wilhelm Müller’s strophic poem ‘Ungeduld’, containing the memorable refrain ‘Dein ist mein Herz’, was set to music by Karl Friedrich Curschmann (Op. 3), Josephine Lang (Op. 6), Leopold Lenz (Op. 22), Franz Schubert (D. 795), and Louis Spohr (Op. 94). Stumpf gives no indication which musical settings he is referring to, but the most prevalent would seem to have been Silcher and Schubert, respectively.

\(^6\) Otto Abraham (1872–1926), was a physician and colleague of Stumpf’s at the Berlin Phonogram Archive. Together with Erich von Hornbostel, he published collaborative
experiments with a parrot aiming at this for years, but without any success. I do not want to claim that there might not be small changes in the pitch of a bird’s call or a bellowing cow for those individuals in question. On the contrary, it is clear from the outset that mathematically equal intonation is only the exception; the rule, however, will be the existence of deviations which move around a middle point within certain boundaries. But these random fluctuations—which result from differing strengths of expiration that may depend on the animal’s momentary physical feeling and condition—should not by themselves be confused with actual transposition.

As far as one can conclude from the above, a bird’s feeling of pleasure—if it is linked to the sounds themselves (for muscular sensations probably also contribute to this)—may well be substantially different from that of human beings’ listening to human and avian music. The animal feeling of pleasure appears to be quite dependent on this specific succession of absolute pitches, whose slight displacement might escape a singer’s attention; the human feeling of pleasure is determined first and foremost by the pitch relationships whereby huge displacements of the absolute pitches occur with the full consciousness of the singers and listeners, without rendering the melody unrecognizable or unenjoyable.iii We say: first and foremost. It cannot be denied that absolute pitch can effect significant differences. Absolute pitch plays a significant role for the Chinese.iv We ourselves invoke ‘key characteristics’, on the other hand, and the aversion of sensitive types to the transposition of a song written for a particular key. However, the


Stumpf refers obliquely to Christian Friedrich Daniel Schubart’s (1739–1791) Ideen zu einer Ästhetik der Tonkunst (1784–1785), whose well-known final section on the characteristic identity of keys argued that sharp keys reflect passion and drives, flat keys evoked gentle feeling and repose. A useful overview of this belief is given in Rita K. Steblin, A History of Key Characteristics in the 18th and Early 19th Centuries (Ann Arbor: UMI Research Press, 1983). See also, T. A. Dubois Christian Friedrich Daniel Schubert’s