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RICHARD WALLASCHEK'S NINETEENTH-CENTURY CONTRIBUTIONS TO THE PSYCHOLOGY OF MUSIC

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RICHARD WALLASCHEK (1860–1917) is most widely known for his contributions to comparative musicology; however, he also made significant contributions to the field of music psychology. From 1890 to 1895, Wallaschek pursued interdisciplinary studies at the British Museum in London. During this time Wallaschek proposed theories about the perception and production of music. According to Wallaschek, the perception of music occurs through two types of mental representation: *Tonvorstellung* (tone representation), which referred to the perception of individual musical elements, and *Musikvorstellung* (music representation), which referred to the perception of the higher-order structure of music. Wallaschek emphasized Gestalt-like concepts in his discussion of *Musikvorstellung*. He also proposed a theory about the production of music, arguing that music and language involve different brain processes. For Wallaschek, music is an expression of emotion while language is an expression of the intellect. Although not widely recognized, Wallaschek was an early contributor to the field of music psychology.

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RICHARD WALLASCHEK (1860–1917) is most widely known for his contributions to comparative musicology, in particular for his work on the origins of music. In his 1893 book, *Primitive Music*, Wallaschek described his theories about the origins of music, which are still considered significant today (Bujić, 1988; Seeger, 1991; Solie, 1998). Wallaschek is also known for his work in music aesthetics and criticism (McColl, 1992, 1996, 1998). Although less widely acknowledged, he made significant contributions to the

field of music psychology (Kümmel, 1973; Maitland, Charlton, & Lodato, 2001; Wellek, 1968). Wallaschek took an interdisciplinary approach to the developing field of music psychology that included integrating neurology, philosophy, psychology, and comparative musicology.

Wallaschek formulated his initial ideas about music psychology from 1890 to 1895 during his studies at the British Museum in London. Although Germany was regarded as a center for music psychology in the nineteenth century, England was also considered an important center for interdisciplinary music scholarship (Bujić, 1988; Graf, 1965). British psychologists James Sully (1843–1923) and Edmund Gurney (1847–1888) represented the English school of music psychology (Bujić, 1984–1985; Sully, 1886). Even Carl Stumpf (1848–1936) recognized the importance of music psychology in England (Stumpf, 1885). Other British scholars who wrote about music and behavior included Charles Darwin (1809–1882) and Herbert Spencer (1820–1903). England was also one of the major centers for the new field of neurology (Koehler, 1999). Many late-nineteenth-century neurologists, including British neurologists William Gowers (1845–1915) and John Hughlings Jackson (1835–1911), studied impairments in music abilities after brain damage.

Wallaschek's writings about music psychology have received less attention than his other works; therefore, the aim of this article is to describe Wallaschek's theories of music psychology, with a particular emphasis on his contributions during his time in London.

Biographical Sketch

Wallaschek was born in the Moravian town of Brünn, in the current Czech Republic, on November 6, 1860. He was exposed to music at a young age and played piano while he was growing up (Wallaschek, 1894a). After receiving a doctorate in philosophy from the University of Tübingen in 1885 and a doctorate in law from the University of Bern the next year (1886b), he completed a habilitation in philosophy (Wallaschek, 1888, 1889) at the University of Freiburg (Graf, 1965; Partsch, 1985). His early interest in music is apparent in his first interdisciplinary music publication, *Ästhetik der*

Tonkunst (1886a), which summarized his ideas about the aesthetics of music.

Wallaschek became interested in music, psychology, and neurology and chose to pursue interdisciplinary studies at the British Museum in London from 1890 to 1895. The museum provided access to a broad range of academic resources, including writings and artifacts in the areas of psychology, anthropology, ethnology, and neurology. In a letter to the principal librarian (dated December 15, 1890), Wallaschek asked to renew his reading ticket at the British Museum and stated, "I am writing a book on the ethnography of music" (Figure 1).

London was a logical place for Wallaschek to develop his ideas about music psychology; it had all the ingredients for his interdisciplinary approach. During his 5 years in London, Wallaschek developed two primary theories of music psychology, one involving the perception of music and the other focusing on production, or expression, of music.

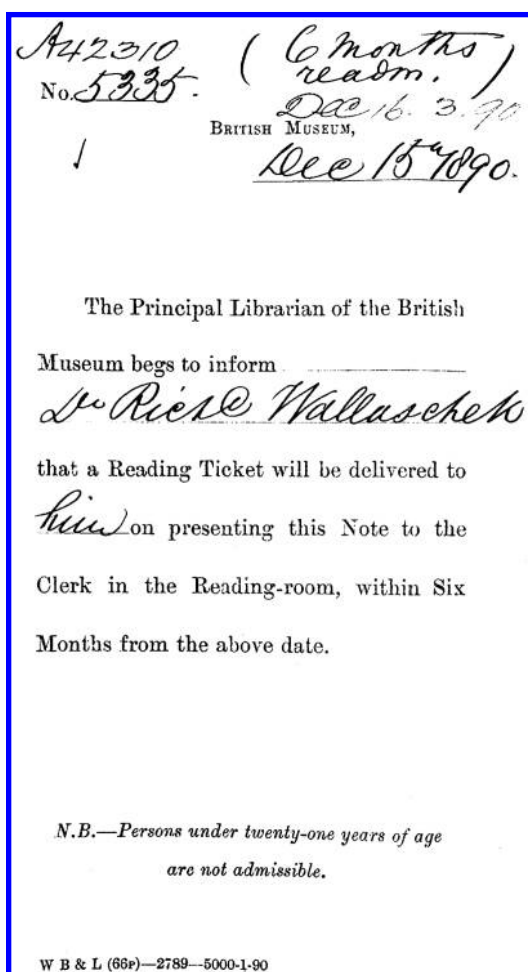


FIG. 1. Richard Wallaschek's reading card for the British Museum (London).

In 1896, after completing his studies in London, Wallaschek returned to Austria and habilitated with Ernst Mach (1838–1916) at the University of Vienna in the aesthetics and psychology of music. His habilitation and subsequent teaching appointment at the university are considered the formal beginning of the academic discipline of comparative musicology (Graf, 1965, 1974; Kümmel, 1973). He taught psychology and aesthetics of music, mainly at the University of Vienna where he was a contemporary of Guido Adler (1855–1941). His main student was Robert Lach (1874–1958), who studied with him from 1896 to 1899. Lach is most widely known for his work in ethnomusicology; he succeeded Wallaschek at the University of Vienna (Potter, 2004). Wallaschek's and Lach's influence continued through Lach's students, such as Ida Halpern, Karl Steiner, Kurt Wöss, and Hans Tischler.

In 1905 Wallaschek expanded upon his ideas of music perception and production in his book *Psychologie und Pathologie der Vorstellung*. This book received positive reviews in journals such as *The Journal of Philosophy, Psychology and Scientific Methods* (Pitkin, 1905), *Mind* (Mackenzie, 1906), and *The Philosophical Review* (Bentley, 1906). Wallaschek's final scholarly work, *Psychologische Aesthetik*, was published posthumously in 1930 by Oskar Katann, an Austrian writer on philosophy and aesthetics. This final book was a compilation of Wallaschek's previous writings, including his 1905 book. Wallaschek died at the age of 56 in Vienna on April 24, 1917 (Lach, 1917).

The following sections discuss Wallaschek's theories of music perception and music production and place him within the late-nineteenth-century development of music psychology.

Music Perception: Tonvorstellung and Musikvorstellung

Wallaschek described his initial ideas about the perception of music in three primary papers (1894a, 1894b, 1895), in which he drew upon ideas from philosophy, psychology, and comparative musicology. He revisited these ideas in two subsequent books (1905, 1930). Based on his observations of musicians and nonmusicians, as well as on his own introspection, Wallaschek concluded that some people appreciate an artistic performance, even if mistakes are made, while others only notice individual pitches, chords, and other musical elements without comprehending the whole.

These observations led him to speculate that the perception of music occurs through two levels of mental representation, *Tonvorstellung* (tone representation) and

Musikvorstellung (music representation). Wallaschek proposed that *Tonvorstellung* is the processing of individual musical elements, such as pitch, intervals, or chords. A person using this level of music representation would “possess a perfectly clear idea of the tones, chords, harmonies, and modulations of a musical piece” (1894a, p. 259). In contrast, *Musikvorstellung* refers to the perception of higher-order musical structure, which is a more general framework created by a combination of individual tones, intervals, and chords and which also includes rhythm, timing, dynamics, and the more “expressive powers” of music.

These two levels of mental representation generally coexist in individuals; when asked to pay attention to individual musical elements, a composer or listener will utilize the *Tonvorstellung* process, but when listening to a piece as a whole, *Musikvorstellung* will dominate. Wallaschek described this further by stating:

... in the most cases, we do not distinctly perceive every tone, and yet we get the whole framework, as it were, of the music into our mind... as a whole, although not quite distinctly and definitely in all its elements. And we hear or perceive music just as it is actually played, i.e., with numerous omissions, various mistakes and involuntary variations such as the greatest artist, the best orchestra cannot help making sometimes. (1894a, p. 264)

Thus, even when mistakes are made, the *Musikvorstellung* process allows the global framework to be perceived. However, according to Wallaschek, not all people are capable of perceiving this framework of music. Some people with a highly developed perception of tones (*Tonvorstellung*) do not comprehend music as a whole. He noted, “In these people the ability is wanting to comprehend the mass of tones and chords as one connected whole, to find out the organic union in the succession of sounds” (1894a, p. 259).

To illustrate this point, Wallaschek described an incident he observed in which two musicians were discussing a performance of Wagner. They felt the piece was not organized in terms of chords, modes, or modulations; they did not enjoy the performance and did not understand the composition. Such listeners, Wallaschek explained, rely on *Tonvorstellung* and are unable to comprehend the piece as a whole. Instead, they are “drowned” in theoretical considerations of individual musical elements. When listening to Wagner, whose music in Wallaschek’s opinion requires a holistic understanding, listeners whose predominant mental representation for music is that of *Tonvorstellung* will hear an “indiscriminate noise,” a phrase often used to refer to “modern”

Romantic music. Therefore, Wallaschek argued, in order to fully understand “modern” music like Wagner’s, one must perceive the framework as a whole, as being more than the sum of individual elements.

Listening Types

For both *Tonvorstellung* and *Musikvorstellung*, Wallaschek proposed “listening types” that reflect differences in the way individuals represent music. He remarked: “How do we think of tones at all? Surely, we are not all alike, and the tones in our mind have as different shapes as words and their meanings” (1894a, p. 259). Thus, he acknowledged an association between music and the mental processes of individuals. He provided an analogy:

Just as in hearing the word “justice”, one may think of the law-court, another of the characters in which the word is written, while a third hears it spoken in his mind; so in thinking of a tone, one associates it with the written note or the key-board, the other with the motion necessary to play it on an instrument, the third is satisfied with sound alone. (1894a, p. 259)

Wallaschek’s three “listening types” were based on the work of French psychologist Théodule Ribot (1839–1916). Wallaschek referenced Ribot, and both attended the International Congress of Experimental Psychology held in London in 1892 (Macdonald, 1892). At this congress, Ribot discussed different ways in which individuals think of concepts. He described an experiment in which he asked 100 individuals to write down their “state of consciousness” after hearing a series of abstract terms. Based on these responses, Ribot (1891) outlined three ways in which people conceptualize ideas: “Type concret,” “Type visuel typographique,” and “Type auditif.” Wallaschek (1894b, 1930) compared his listening types to Ribot’s types, in particular to Ribot’s type auditif. Wallaschek described a visual type, motor type, and sound type, which are based on associations with thoughts, images, or movements.

Visual type. The visual type associates tones and music with visual images. When listening to individual elements (and the *Tonvorstellung* process is in play), listeners imagine the written notation of what they are hearing, or the keys on a keyboard being played. When the *Musikvorstellung* process is engaged, visual types associate music with images of landscapes, scenes, or pictures, without thinking of individual tones. For example, Wallaschek described a woman who, when hearing Saint-Saëns’ *Danse Macabre*, imagined “an ocean beach illuminated by moonlight with fishermen sitting

ashore, lighting a campfire" (1894b, p. 9). Wallaschek also described the well-known writer and musician E.T.A. Hoffman as a visual type, referring to his use of the phrase "green fields" and other pastoral phrases to describe Haydn's symphonies. As these examples imply, the visual type of Musikvorstellung hears music and imagines a more global visual image than does the visual type of Tonvorstellung.

Motor type. Wallaschek (1894b) described six different motor types, who associate tones with physical movements. For Tonvorstellung, music can be associated with movements required to play an instrument. For Musikvorstellung, music can be associated with (a) movements that make the beat explicit, as in dancing; (b) movements of the body, as in waving hands or arms; and (c) body movements in the context of drama, as in opera. Wallaschek's final two motor types associate music with movement of the larynx (subvocalizations of what is heard). He did not discuss whether these last two types are associated with only one process or with both processes of Vorstellung.

Sound type. The sound type associates tones and music with the sound itself and has no corresponding thoughts or images. Wallaschek described two kinds of sound types; the first he said was analogous to Ribot's type auditif. With this sound type, listeners enjoy individual tones, intervals, and chords but do not know what to do with an entire composition. There is no comprehension of rhythm and time, and the pieces are not heard as organic wholes. Wallaschek also suggested that individuals with absolute pitch, who are able to identify pitch independent of a reference pitch, are examples of the sound type. In his earlier papers (1894a, 1894b) he described this type as existing for both Tonvorstellung and Musikvorstellung, but in his posthumous 1930 book he described this sound type as an inferior type used for imagining or representing tones but not for representing music. Wallaschek described a second sound type in which music is perceived and treated as a formal game of the intellect, as one would think of mathematics or logic.

A particular listening type for tones does not necessarily predict a listening type for music. Wallaschek gave the example of a person who is a visual Musikvorstellung type and a motor Tonvorstellung type, associating music with visual images when listening to global aspects but associating individual tones with motor movements.

Rhythmic Mental Representation

Although Wallaschek's ideas about rhythm and meter do not involve Tonvorstellung or Musikvorstellung, they do involve the perception of a global framework for meter,

a process similar to Musikvorstellung. Wallaschek (1895) described the mental process of "time-sense," the act of intuitively perceiving groups of beats within a piece of music. Beats are not perceived individually but rather are immediately grouped and perceived as a series of groups making up measures:

The rhythm is in the object, while the time-division is only the form in which our mind perceives the rhythm, the way in which it arranges, systematizes, unites the sensation of several beats into one whole period, into a time-unity . . . this time-sense of the observer, his ability to arrange regular sensations into periods, to perceive them not as single beats but as groups of beats, is an immediate (intuitive) perception, i.e. the observer does not arrive at this form of group-perception through counting the number of beats which make up one group (bar or period), but he immediately perceives the group as such without the medium of counting. (1895, p. 28)

Furthermore, this process of grouping is not done on the level of sensation; it is a process of the mind. Wallaschek described grouping as a "cortical process of group perception," something that happens in the brain and is, therefore, higher-level mental processing. He remarked, "The time-sense is . . . a mental work of grouping the sensations, and this takes place not in the senses themselves but in the cortex" (1895, p. 29). Wallaschek was careful to emphasize that because time-sense is a mental process, it does not exist in the music per se. Thus, different people could perceive different metrical groupings when listening to the same written meter.

Wallaschek's theory in context: Tonpsychologie, Musikpsychologie, and the Gestaltqualitäten movement

Wallaschek's theory of music perception occurred at a time when music psychology in Germany and Austria was moving from the study of physiology and the perception of individual musical elements (*Tonpsychologie*) to the study of how individual musical elements fit together into entire musical compositions (*Musikpsychologie*). While Tonpsychologie focused on sensations (*Empfindungen*), Musikpsychologie focused on conceptions, or mental representations (*Vorstellungen*) for music.

The development of Tonpsychologie and Musikpsychologie has been traced through several researchers, most particularly Hermann von Helmholtz (1821–1894), Carl Stumpf, Theodor Lipps (1851–1910), Hugo Riemann (1849–1919), and Ernst Kurth (1886–1946). The work

of Helmholtz, Stumpf, and Lipps is generally characterized as Tonpsychologie, while Riemann and Kurth fall into the Musikpsychologie category (Rothfarb, 1989; Marvin, 1987).

The use of the term *Vorstellung* has a complex history going back to Kant and Schopenhauer (Wason & Marvin, 1992). The translation of the term is also difficult; it can be translated as *idea*, *representation*, *presentation*, *imagination*, or *conception* (Wason & Marvin, 1992). Wallaschek used the German terms *Tonvorstellung* and *Musikvorstellung* not only in German (1894b) but also in an English paper (1894a), in which he gave English translations for both terms. His English translations vary from “mental tone representation” or simply “tone representation” and “music representation,” to “ideas of tones and music.” Wallaschek’s use of these terms indicates he was thinking about mental representation—higher-order music cognition. His concept of *Tonvorstellung* can be seen as part of Tonpsychologie—the study of individual musical elements—while his concept of *Musikvorstellung* lies within Musikpsychologie.

Wallaschek was not the first to talk about different levels of perception. Helmholtz (1863, 1954) described three levels involved with music perception: (a) the physical level, concerned with the acoustic properties of sound; (b) the physiological level, centered on processes within the ear that give rise to sensations (*Empfindungen*); and (c) the psychological level (*psychologischen Tiel*), where sensations result in mental images (*Vorstellungen*) that are perceptions (*Wahrnehmungen*). Helmholtz felt that while the physical aspect of music had been addressed, the physiological and psychological aspects of music had not yet been adequately investigated and that it was particularly important to look at physiological processes. *Die Lehre von den Tonempfindungen* (1863) is primarily concerned with the physiological aspect of music understanding, dealing with the development and role of sensations.

Stumpf (1883) also described different levels of music perception. The sense of hearing results in sensations (*Empfindungen*), which become mental representations (*Vorstellungen*). Stumpf stressed that a mental representation can be the result of hearing a stimulus or of remembering one, which he described as an imagined tone or other sound. Mental representations are then judged or analyzed (*Urteil*) before understanding, or knowledge (*Erkenntnis*), is achieved. If Helmholtz went from the physical to the physiological, Stumpf went from the physiological to the psychological. He emphasized mental activity versus sensory activity. However, Stumpf still investigated individual tones, intervals, etc. without considering these in a musical

context. Like Helmholtz and Stumpf, Lipps, in an essay in 1885, described a chain of perceptual events, from the physical to the psychological (Lipps, 1905). Like Stumpf, he emphasized the psychological while dealing with individual musical elements removed from musical context.

The increasing emphasis on mental representation for music seen in the work of Stumpf and Lipps was a precursor to research in Musikpsychologie. In addition to an emphasis on mental activity, Musikpsychologie can be linked to early Gestalt ideas, particularly to the work of Christian von Ehrenfels (1859–1932). Ehrenfels first described “Gestaltqualitäten” as spatial and temporal patterns or forms, where the forms are holistic entities independent of the separate elements contained within them (Ehrenfels, 1890). He believed such forms are constructs of the mind and created from sensations (Hillner, 1984; Schultz & Schultz, 2000). Ehrenfels (1890) used music examples for his arguments and talked in terms of mental representation. He used the term *Tonvorstellung* in a general way, as an example of the mental representation of holistic forms (Gestalt qualities). 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 a completely different set of pitches. Thus, he proposed, the perception of a melody is more than the perception of its individual parts. A melody is, therefore, a Gestalt quality (Ash, 1995; Gjerdingen, 2002; Schultz & Schultz, 2000).

In addition to Ehrenfels, Mach had made similar arguments a few years earlier (1886/1959), and Stumpf, with his emphasis on psychological factors, was one of the main forerunners of the development of Gestaltpsychologie in the early twentieth century. Stumpf’s students are considered to be the founders of the Gestalt school, particularly Max Wertheimer (1880–1943), Wolfgang Köhler (1887–1967), and Kurt Koffka (1886–1941). Many of Stumpf’s ideas are Gestalt-like in nature. For example, he described how the initial judgment or analysis of an interval (that has become a mental representation based on sensations) is often not an analysis of the relationship between the individual tones, but a recognition of the sound as a whole (1883). In addition, Stumpf’s theory of tonal fusion (*Tonverschmelzung*) has clear, Gestalt-like properties (Ash, 1995; Green & Butler, 2002). Stumpf argued that when the two tones of an interval are perceived as a whole rather than as two separate elements, the tones have fused and a perception of consonance is the result. This occurs on a psychological rather than a physiological level. Lipps, who succeeded Stumpf at Munich in 1894, has also been associated with early Gestalt ideas (Boring, 1950).

Although mental activity had been discussed in music scholarship before Ehrenfels' (1890) paper, it had not been a prominent feature of such scholarship. Gjerdingen (2002) traces the emphasis on *Tonvorstellung* in music scholarship from Ehrenfels to Riemann. Riemann described his approach as "top down," focused on the mental representation of music, and saw it as a continuation of the work of Helmholtz and Stumpf, who practiced a "bottom up" physiological approach to the study of music psychology (Riemann, 1914). Riemann (1914) described his approach as a "new discipline" and his essay as the "very first emphatic observation of the postulate" (Wason & Marvin, 1992, p. 83). He discussed how music was a property of the human intellect rather than a process based on physical and physiological analysis of sound (Marvin, 1987; Rothfarb, 1989). Like Riemann, Ernst Kurth (1913) focused on the mental processing of music within a musical context rather than on the perception of individual elements. The foundation of music theory, he argued, should be the mental experience (Rothfarb, 1989).

Wallaschek's writings between 1890 and 1895 about *Tonvorstellung* and *Musikvorstellung* are consistent with both *Musikpsychologie* and the *Gestaltqualitäten* movement. He focused specifically on mental representation for music, as opposed to physiological sensations. Like Stumpf and Lipps, even when he described how individual musical elements are perceived, he talked in terms of mental processing (*Tonvorstellung*). However, with his discussion of *Musikvorstellung*, his belief that time-sense is a result of mental processing rather than of sensation or the musical object itself, and his description of a holistic understanding of music, both for melody and for rhythm (1894a, 1895), Wallaschek emphasized higher-order cognitive processing to a greater extent than did Helmholtz, Stumpf, or Lipps, and earlier than Riemann or Kurth. For example, Wallaschek stated in 1894:

... this ability of mentally representing tones does not make up the musical mind. Music, as a whole, is something more than all the tones taken together, and we may be able to have tones in our mind without having music. (1894a, p. 263)

The question arises, did Wallaschek influence Riemann or Kurth? Riemann was aware of Wallaschek (Lach, 1917) but did not reference him in his essay on *Tonvorstellung* (Riemann, 1914). It is possible that Kurth was influenced by Wallaschek, since Kurth was a student of Guido Adler's at Vienna and may have had contact with Wallaschek.

It is unclear how Wallaschek formed his ideas about music representation. He may have been influenced by Ehrenfels; however, he does not cite Ehrenfels in any of his relevant papers or books. It is possible that Wallaschek came into contact with Ehrenfels at the University of Vienna where both studied philosophy in the early 1880s. Wallaschek was influenced by Mach, with whom he habilitated at the University of Vienna in 1895–96 (Welleck, 1968; Graf, 1965). He knew of Mach's work at least as early as 1893, which seems to be his earliest reference to Mach. Wallaschek was also influenced by Stumpf and referred to Stumpf's work as early as 1891 (1891b).

Music Production: Music as an Expression of Emotion

Wallaschek drew upon his background in philosophy, psychology, and comparative musicology, as well as his interest in neurology, to develop a theory about music expression. He argued that music is an expression of emotions, while speech is an expression of the intellect. Although the idea that music is an expression of emotion was not a new concept (Bujić, 1988; Kivy, 2002), Wallaschek approached the topic from a different perspective, drawing from theories about the origins of music and examples of patients from neurology. Wallaschek first presented this idea in two papers that were published in 1891, one in the British psychology and philosophy journal, *Mind* (1891a), and the other in the first German musicology journal, *Vierteljahrsschrift für Musikwissenschaft* (1891b).

The theory that music evolved from speech, although proposed much earlier, was commonly debated during the eighteenth and nineteenth centuries by philosophers, psychologists, and comparative musicologists. Spencer first wrote about the origins of music in 1857 (Spencer, 1857), and again several decades later in the journal *Mind* (Spencer, 1890, 1891). His 1890 article was a postscript to his 1857 essay and argued against the ideas put forth by Darwin (1871) and Gurney (1876, 1880). Spencer argued that music developed out of emotional speech and Darwin refined this, later proposing that music evolved from emotional language that was used to attract the opposite sex. Gurney felt that music developed out of prosodic exaggerations of emotional speech.

In 1891 Wallaschek joined this discussion about the origins of music. He disagreed with Spencer, Darwin, and Gurney, proposing that music evolved from rhythm and was an expression of emotion. He presented three arguments to exemplify why music expression did not evolve from speech. First, he argued that primitive vocal

music with text had no relationship with conversational speech and, therefore, could not have evolved from language. He stated:

We find even in the most primitive state of culture a sort of recitative, side by side with a kind of music, in which the rhythm alone plays a leading part, and with songs, the words of which are perfectly meaningless or at least cannot be understood by the tribe in question. In such circumstances, it is obviously impossible for the musical modulations to have taken rise from the spoken modulations, since there is no genuine speech in the case at all. (1891a, p. 382)

Wallaschek pointed out that the words in primitive songs often do not carry meaning and are not comprehended like words used in verbal communication. He used the example of the Hottentots, a tribe in South Africa, who adapted sections from other songs that they did not understand and also composed songs with meaningless text. Thus, because songs do not have elements of meaningful language, Wallaschek argued, music could not have evolved from speech. This argument continued to spark considerable debate into the twentieth century (Antcliffe, 1916; Kivy, 1959; Levman, 1992; Newman, 1905/1969).

Next, Wallaschek asserted that the speech used in songs develops later than conversational speech and also represents a separate brain process. He noted: "I have never heard an infant really sing—that is to say, invent (though it may repeat) a song—before it could actually speak" (1891a, p. 384); thus, he made a distinction between the creation and imitation of music. Wallaschek also argued that if music developed out of speech, it would be possible to identify elements of conversational speech in art songs in the same way that elements of primitive dance are evident in modern dance styles. He stated:

... we should inevitably discern some traces of its development in its continual advance from a primitive stage up to perfectly artistic songs, just as we are able to follow a parallel development from the movements of a primitive, up to those of a modern dancer. (1891a, p. 383)

For Wallaschek, even though both conversational speech and singing use vocal sounds, they represent distinct modes of expression and rely on separate brain processes.

Finally, Wallaschek argued that language used in songs and language used in conversational speech are dissociable in patients with certain neurological conditions. Wallaschek (1891b, 1894b) discussed examples of

patients with aphasia, an acquired impairment of language after brain damage, who were able to verbalize words when singing despite limited conversational speech. Wallaschek compiled cases from neurological literature. For example, he described one patient who was able to verbalize only "yes" and "no" but correctly sang the text and melody for two verses of the song "I Dreamt That I Dwelt in Marble Halls" (Gowers, 1887). Another patient was only able to verbalize "mama" yet was able to sing the tune and text of another song (Knoblauch, 1888). These and other examples in nineteenth-century neurology literature (Falret, 1866; Jackson, 1871) provided evidence for Wallaschek that music and language abilities are independent processes and rely on separate brain structures.

Wallaschek argued that it is possible to sing songs in the context of aphasia because music is independent of intellectual thought, which is required to produce conversational language. Wallaschek felt that the singing of song texts is an expression of emotional language, which remains preserved in aphasia. Furthermore, language and music are dissociable because they depend on different parts of the brain.

Wallaschek adapted his idea about music and language from William Gowers and John Hughlings Jackson, two prominent neurologists who also worked in London. Gowers (1887, 1888) differentiated between intellectual and emotional language based on observations of neurologic patients. He believed that ideas are expressed by language in the form of propositions (information units), whereas emotions are expressed by simple and automatic methods, primarily by gesture. Gowers noted that songs also express emotion and not propositional language, stating: "No one intends to express the propositions contained in the words of the song. The words are used automatically, and this automatic utterance must have been effected by the right hemisphere" (1887, p. 134).

Jackson (1866, 1878, 1879) held similar views. He observed aphasic patients who had limited spontaneous speech yet were able to verbalize short phrases, which he called "automatic speech" or "recurring utterances" (e.g., "Oh my goodness," "Thank you"). He proposed that singing a song text is similar to automatic speech, both being examples of emotional language. Jackson (1879) described one patient:

His vocal organs act apparently well; he may be able to sing. His emotional language is apparently unaffected. He smiles, laughs, frowns, and varies his voice properly. His recurring utterance comes out now in one tone and now in another, according as he is vexed, glad etc.;

strictly we should say he sings his recurring utterance; variation of voice being rudimentary song (Spencer); he may be able to sing in the ordinary meaning of that term. (p. 320)

Jackson, therefore, concluded that automatic language is generated from emotion because single words or phrases do not have intellectual or propositional value. This quotation also demonstrates that Jackson was familiar with Spencer's theories of the origins of music and suggests an interaction among the philosophers, neurologists, and psychologists in late-nineteenth-century London. Wallaschek, thus, built upon the observations of Gowers and Jackson by arguing that singing is an expression of emotion and therefore dissociable from conversational language. The dissociation of language in singing and speech is an issue that continues to interest researchers today. Recent research has addressed the question by comparing the singing and speaking of song texts in patients with aphasia (Cohen & Ford, 1995; Hébert, Racette, Gagnon, & Peretz, 2003; Peretz, Gagnon, Hébert, & Macoir, 2004). These authors conclude that when task demands are controlled, there is no difference between spoken and sung song texts, and verbal production in speaking a song text and singing a song text is subserved by the same mechanism. These findings are consistent with Wallaschek's, Gower's, and Jackson's idea that automatic speech is similar to song texts.

Wallaschek was one of the first music scholars to consider the brain in the process of music expression. His use of neurological cases as evidence for his argument and his idea of two distinct neurological processes—one for emotion, one for intellectual thought—were not commonly discussed among psychologists or comparative musicologists during the nineteenth century. It is clear from his writings that Wallaschek felt an understanding of the brain was essential for studies of music psychology:

It is not the sense of hearing alone which is to be examined, but when the . . . psychology of music [is] in question, the subject for inquiry should be the cortical process. (1895, p. 33)

Furthermore, Wallaschek's work was regarded by neurologists as some of the earliest writings on music and the brain (Ireland, 1894; Edgren, 1895; Probst, 1899; Henschen, 1920).

While in London, Wallaschek most likely had the opportunity to interact with scholars who discussed the brain, such as neurologists Gowers, Jackson, and Samuel Wilks (1824–1911) and writers Grant Allen

(1848–1899) and Edith Simcox (1844–1901). Sully and Gurney would also have been part of this intellectual environment, although Gurney died 2 years before Wallaschek arrived in London. Wallaschek knew Sully personally, acknowledging him in his 1893 book, *Primitive Music*, and probably interacted with Ribot at the 1892 Congress of Experimental Psychology in London, which they both attended (Macdonald, 1892). Wallaschek also interacted with Spencer in their debate on the origins of music in *Mind*. Spencer was cited by several of these scholars (e.g., Sully, 1886; Jackson, 1866, 1878, 1879; Allen, 1877, 1878) and criticized by Gurney (Gurney, 1882). Wallaschek was obviously familiar with these individuals and cited their work. Thus, Wallaschek's interdisciplinary interests reflected the interactive intellectual milieu in London during the late nineteenth century.

Conclusions

Although not widely recognized today, Wallaschek was an early contributor to the field of music psychology. His stay in London from 1890 to 1895 was a pivotal time for the synthesis of his interests in philosophy, psychology, comparative musicology, and neurology. It was during his stay in London that Wallaschek first proposed his ideas about music perception and production.

Wallaschek's discussion of *Tonvorstellung* and *Musikvorstellung* was part of the development of *Musikpsychologie* from *Tonpsychologie*. The distinction between these two kinds of music psychology was discussed in the early twentieth century in the writings of scholars like Riemann and Kurth. *Tonpsychologie* is the study of physiology and the perception of individual musical elements, emphasizing sensations, while *Musikpsychologie* is the study of how individual musical elements fit together in entire musical compositions, emphasizing mental processes. Wallaschek went farther than did his contemporaries Helmholtz, Stumpf, and Lipps in talking about mental processes. He made a distinction between the perception of individual tones on one hand and of holistic musical compositions on the other, in the 1890s, prior to Riemann or Kurth. He was unique in that he used elements of both (*Tonvorstellung* and *Musikvorstellung*) in his theory of music perception. Wallaschek also emphasized Gestalt-like qualities in his discussion of *Musikvorstellung* and of rhythm and meter.

Wallaschek differed from his contemporaries by drawing upon neurology in his theory of music production. He argued that music is an expression of emotion and not an outgrowth of speech, as did Darwin, Spencer,

and Gurney. He presented three arguments as to why music is an expression of emotion, drawing from the work of neurologists Jackson and Gowers, who were also in London at the same time. Wallaschek argued that language and music are independent processes and depend on different parts of the brain. His descriptions of patients with neurological conditions supported his argument for two distinct neurological processes—one for emotion, one for intellectual thought. It is clear from his writings that Wallaschek felt an understanding of the brain was essential for the study of music psychology.

Wallaschek was recognized during his lifetime for his work in music psychology, as evidenced by his interactions with Spencer (1890, 1891; Wallaschek, 1891a) and by contemporary reviews of his work on music perception and production (Dixon, 1895; Bentley, 1906; Mackenzie, 1906; Pitkin, 1905). His influence continued through the early twentieth century, as seen in music perception literature (Kobelt, 1920; Marchand, 1932) and literature on music and language (Newman, 1905/1969; Antcliffe, 1916; Herzberg, 1924; Wilson, 1927; Levman, 1992). As mentioned above, Wallaschek was recognized in nineteenth- and twentieth-century neurology literature as one of the earliest writers on

music and the brain (Ireland, 1894; Edgren, 1895; Probst, 1899; Henschen, 1920). Wallaschek's work was part of an explosion of scholarship in music psychology stimulated by the development of new disciplines in the late nineteenth century (e.g., psychology, neurology, musicology). This article represents an attempt to explore one aspect of the origins of music psychology as a discipline.

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