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Sound quality: Music therapeutic perspectives and criteria

Wolfgang Mastnak*

Abstract

Aesthetic perspectives play a crucial role in music therapy. By contrast, issues of sound quality are only relatively rarely studied. Cases of clinical and educational music therapy with instruments of inferior quality raise questions about appropriate tools and criteria for sound quality. In view of the patients' nuanced forms of sensory experience and responsiveness to sounds, we suggest we approach sound quality from artistic, patient-centred, and scientific perspectives that involve physical, neuroscientific, psychological, aesthetic, and metaphysical facets. These reflections result in a theoretical framework for the discussion of sound quality in clinical music therapy. This concept is based on eight crucial perspectives: aesthetic beauty; symbolic significance; identity and 'sound-selves'; ontological and cosmic characteristics; functional healing mechanisms; creative inspiration and sound-triggered epiphany; self-healing potential and new self-images; sounds that reconnect 'denatured' individuals and their human nature. Sound quality comprises to both aesthetic criteria (the 'good' sound) and the multifaceted, therapeutically relevant natures of sound.

Keywords: sound research, philosophy of sound, theory of music therapy, trends in music therapy, interdisciplinary music therapy, aesthetics, sound-self

Klangqualitäten: Musiktherapeutische Perspektiven und Kriterien

Zusammenfassung

Während ästhetische Aspekte in der Musiktherapie eine bedeutende Rolle spielen, scheint die Frage nach der Qualität von Klang einen Nebenschauplatz darzustellen. Der musiktherapeutische Einsatz „schlechter“ Instrumente im klinischen und pädagogischen Bereich ruft allerdings die Frage nach adäquaten Kriterien für die Qualität von Klang in der Musiktherapie aufs Tapet. Aufgrund der patientenseitig unterschiedlichen und oftmals höchst nuancierten Klangerfahrungen und Reaktionen auf auditive Stimuli werden künstlerische, patientenzentrierte und interdisziplinär forschungsbasierte Zugänge, die physikalische, neurowissenschaftliche, psychologische, ästhetische und metaphysische Perspektiven berücksichtigen, vorgeschlagen. Diese Überlegungen führen zu einem theoretischen Modell zur Diskussion von Klangqualität in der klinischen Musiktherapie. Dieses beruht auf acht Dimensionen: (i) ästhetische Schönheit, (ii) symbolische Bedeutung, (iii) Identität und „Klang-Ich“, (iv) ontologische und kosmologische Charakteristika, (v) funktional-kurative Mechanismen, (vi) kreative Inspiration und durch Klang hervorgerufene Spontanerkenntnis, (vii) Selbstheilungspotenzial und neue Selbstbilder und (viii) Klänge, die ein verlorenes Ich wieder zurückbringen können. Qualität von Klang berücksichtigt dabei sowohl ästhetische Kriterien (der „gute“ Klang) als auch seine facettenreichen, therapielevanten Wesenszüge.

Schlüsselwörter: Klangforschung, Klangphilosophie, Theorie der Musiktherapie, Musiktherapeutische Trends, interdisziplinäre Musiktherapie, Ästhetik, Klang-Selbst

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Introduction: Three questionable practices

A geriatric care unit in China. Patients, mainly diagnosed with neurodegenerative syndromes, are handling small, bell-shaped, clattering objects. The patients are copying the therapist's movements mechanically. Their faces have a rigid, unenthusiastic expression which cannot be adequately explained by their neurological diseases. According to the therapist's intention the setting is meant to maintain motor skills, social contact, and cognitive reactivity. Still, the patients seem just to be carrying out what they are told to do.

A paediatric care unit in France. Rather small, mostly sharp-sounding 'objets sonores' (French, 'sound objects') are being used to distract the young patients and to provide an aesthetically interesting environment. The hospital musicians' actions are very close to the patients' eyes and ears and their movements and facial expressions are exaggerated. Although they intend to encourage the children and inspire them to try out creative activities, an evaluating psychologist rather identifies emotional irritation and defensive reactions.

A psychiatric care unit in Germany. The music therapist is working with a small group of patients with various diagnoses. Small, high-pitched Orff-instruments are being used to improvise. The whole atmosphere is dull and dreary, no therapeutic progress or development visible. After the session the therapist says that music therapy is just meant to structure the patients' day and to keep them active.

Of course, we must not regard these sessions as representative of music therapy or clinical music activities in those three countries. Nonetheless, comparative analyses reveal a certain coincidence of low sound quality, unenthusiastic performance, and a serious petrification of emotional flow. The term 'low sound quality', however, needs music-therapeutic definition and must not be confused with traditional, organological, or ethnological criteria for a 'good sound'. Based on qualitative investigations and a synopsis of music therapeutic standpoints, a pragmatically relevant theoretical framework is suggested below.

Sound in music therapy: Perspective or crucial issue?

Aesthetic features and interactive processes are frequently regarded as the main criteria distinguishing between music therapy and 'music in medicine'. While artistic, experimental, neuroscientific, and philosophic aesthetics play an important role in music therapy (see e.g. Salas, 1990; Stige, 1998; Stige, 2009; Darnley-Smith, 2013), investigations focus-

ing on the significance and function of sound qualities are sparse.

In the author's opinion this problem is deeply connected with the extreme heterogeneity of music therapeutic practices and the multifarious theoretical frameworks they refer to. In many music therapeutic contexts the musical phenomenon as a whole seems to be more interesting than the nature and function of its sounding constituents. Reviewing the enormous range of music therapeutic reports and research papers allows us to identify four main focal points of music in clinical application:

Subcortical and physiological mechanisms

Music has advantageous psycho-neuro-immunological effects (Fancourt, Ockelford & Belai, 2014). Aesthetic experience and musical preferences do not explain the whole complex of these effects in a satisfactory way. Investigating the connection between cardiorespiratory variables and music, Bernardi et al. (2009, p. 3171) showed that 'music emphasis and rhythmic phrases are tracked consistently by physiological variables' and that aesthetic appreciation plays a relatively marginal role for music-induced cardiac regulation.

Music can bring forth physiological, somatic, and autonomic nervous effects which are used in preventive cardiology and long-term cardiac rehabilitation, for instance. Underlying mechanisms involve both subcortical and cortical processes (Mastnak, 2014). Auditory processing beyond cognitive and aesthetic awareness exploits structural similarities between physiological and musical shapes as well as to non-conditioned physiological responses to auditory stimulation.

Hermeneutic and symbolic processes

When A, a middle-aged man, is frustrated, wants to escape reality, to hide himself away, and to remain in his somewhat 'autistic' world, he sings the first bars of the Czech song 'Hluboká vráska' by Jiří Suchý. The short swinging phrases draw him along an imaginary spiral towards his 'centre' that is emotionally disconnected from the social world. The process matches Deschênes's (1995) description of semantic meanings and symbolic values of music and remind us of how Marshman (2003) explains the significance of music from a Jungian perspective.

While musical triggers of physiological mechanisms do not essentially involve aesthetic experiences and biographical connotations, hermeneutics (Ramsberg & Gjesdal, 2005) play an important role in music therapeutic symbol

processing and the generation of significance. In music therapy, hermeneutics have a triple meaning: They refer on a quasi meta-theoretical level to hermeneutic studies on music therapy, such as e.g. in oncology (Olofsson & Fossum, 2009). With immediate clinical relevance, they concern modes of how to understand musical expressions of patients and their meaningful aesthetic experiences (Migner-Laurin, 2013). Thirdly, hermeneutics refer to the meaning of music, an approach that involves music history, biographical experiences, acculturation and aesthetic spiritual moments.

Hermeneutic processes in music therapy are inseparably connected with artistic awareness and the individual feature of the patient's musical self. In this context music is also regarded as a meaningful carrier of life experiences, of conditioned cognitive and affective responses, and of aesthetically transformed and in that way 'embodied life philosophies': modes of life that match self-concepts and individual identities. In this field, particularly depth-psychological and humanistic perspectives are of particular importance, generating intersections between music therapy and music-associated psychotherapy. This approach is deeply connected with the issue of humanities as a basis of music therapy (Ruud, 2010).

Aesthetic and artistic performances

Claus Thomas, paediatrician, music therapist, stage director, scenic reciter, and probably the most important initiator of music and drama therapy in Germany, says that the most moving moment in his life and the culmination of his 12-year-long music-dramatic work with young poly-handicapped people was a performance of Saint Francis of Assisi's 'Canticle of the Sun' in an Italian cathedral. According to Professor Thomas, during the performance the clinical symptoms and diagnoses lost their dominance, seemed to vanish, and the brightness of the performers' souls and selves became visible. Of course, music therapeutic performances do not heal – at least not in a Western medical sense. But they may change lives, just as in the paradigm of Nordoff-Robbins music therapy.

A wide field in music therapy refers traditionally to the 'music making patient'. Associated theories usually involve the anthropological and clinical hypothesis that music is intertwined with human nature and musical activities incorporate a variety of therapeutic and health-related agents. In addition to that, they emphasise mainly analogous qualities of music and man, the therapeutic function of the creative (Leckey, 2011) and self-expressive act, the joy and life enhancing quality of musical performance, and the power of aesthetic experience.

Sound ontology and sound functions

Mrs K was a psychiatric patient with mixed symptoms of psychotic and dissociative disorders. She felt her soul as being approximately one meter apart of her body and spoke about a terrifying feeling that was, however, at the same time not accessible to her 'uprooted emotion'. Pharmaceutical treatment did not change her pathological state. She was looking for 'her sound', and finally found a simple tonebar that she discovered as 'her sound'. This notion referred to both the pitch and the timbre. She held the tonebar close to her thymus gland and felt a mystic re-integration of body and soul. Although there is no obvious explanation for this phenomenon, performing that sound became her most efficient 'therapy'.

In music therapy, sound qualities and sound functions refer to a very heterogeneous field and are involved in applications which are as different as sound cues in Parkinson treatment for improved gait skills or mystical identification with the sound of a trombone creating a feeling of having regained individual wholeness. Interdependencies between individuality, pathology, sounds, and healing processes still lack in-depth investigation as far as both therapeutic evidence and underlying theories are concerned. To encourage debate and to elucidate possible connections is the target of this perspectives paper.

Focusing particularly on sound qualities, we need to delimit the term and to provide a working distinction between sound and music. According to our understanding, sound is the auditory phenomenon that is triggered by sound waves and created by the primary auditory cortex or just generated, as imagined sound or auditory hallucination, by that specialised cortical area.

In that sense sound can be understood as an indispensable elementary constituent of 'music' which involves – at least from a Western musicological perspective – a creative act such as composing or improvising, further use of structural units such as rhythms, motives, melodies, chords, and a certain mode of artistic processing, such as using counterpoints or variations. In clinical contexts: a patient may be able to produce cello or trombone sounds that trigger a feeling of 'sound identity'. And yet, that patient may not be able to perform a piece for cello or trombone.

Discussing sound as an entity involves physical, neuroscientific, psychological, aesthetic, ontological, ethnological, and spiritual issues. In the context of music therapy we study how sounds modulate neurotransmitters and physiological responses. We may investigate distinct aesthetic sound preferences of a patient and the individual symbolic significance of those sounds. We may involve ar-

chaic myths about sound as the origin of life or ethno-medical positions that identify analogue principles in sounds and universal harmonies and hence infer self-regulatory healing potential of sounds. For those reasons the term 'sound ontology' is used here in a philosophical sense pointing to the essence and 'true nature' of sounds, and not in the way we find it today in computer sciences (Lobanova, Spenader & Valkenier, 2007).

On this basis the following theoretical framework for a music therapeutic discussion of sound qualities is developed. Sound in music therapy may be regarded both as a field for discussion and as a crucial issue: an absolutely essential entity in music therapy.

Sound qualities: A music therapeutic framework

The term 'sound quality' in music therapeutic contexts does not necessarily refer to the notion of 'sound quality' as we use it when speaking about a Stradivarius violin or a Steinway piano. Yet sound qualities seem to play a decisive role in music therapy. In this article we suggest a triple perspective that encompasses aesthetic, hermeneutic, and ontological features. In introducing these aspects our aim is to create a theoretical framework which should facilitate clinical practice.

In her essay on consciousness and qualities Carolyn B. Kenny refers to the creative process of music therapy and suggests (1996, p.87) 'the notion of "qualities", their overall significance and their function in developing our aesthetic experience' and discusses the 'qualities' of anticipation, intimacy, surprise, suspendedness, epiphany, awakening etc. These focuses are relevant to our considerations about music therapeutic qualities of sound which underscore the multifaceted and highly nuanced inner connection between 'sound and psyche', the core topic of the 8th World Congress of Music Therapy in Hamburg (Bonde, 1996).

Various studies mirror the complexity of how sound quality is tackled in music therapy. For instance, referring to individuals with severe disabilities, Kittay (2009) points to specific cues in everyday sound environments and a lack of relevant research. Different sound qualities play an important role in musical speech therapy (Bang, 2010), and Schapira (2003) uses the term of 'last sounds' when referring to psychotic patients.

There is common clinical evidence that, for instance, psychiatric patients tend to modify their modes of sound interpretation, but they do not necessarily diminish their aesthetic demands. On the contrary, as can be seen in clinical practice, they often develop a highly nuanced auditory sense and aesthetic percep-

tion, conditions which call for further research on sound qualities in music therapy.

Reviewing the music therapeutic literature and analysing data from clinical practice allows us to identify qualitative types of sounds which seem to play a crucial role for music therapeutic efficacy. They point to the arts and to beauty as healing modalities (Shepard, 1994). They reveal connections between the morphology of sounds and physiological processes. They highlight the mystical anthropomorphism of the sound's gestalt as well as metaphysics and ontological perspectives of the sound's 'inner nature'. Putting these types into a systemic structure leads to the following categorisation.

The beauty of sounds

'Beauty' is one of the most frequently used terms in music therapy. Elucidating the healing power of beauty, Kenneth Aigen speaks about the phenomenon that all people resonate to beauty in life (2014) and – referring to Clive Robbins – about the importance of experiencing and creating beauty (2012). Also from an interdisciplinary perspective it seems to be evident that the human significance of beauty must not be narrowed down to a superficial attribute in the sense of 'quite nice'. Stressing the term 'sound', Margareta Wårja (1994) mentions, from a Jungian perspective, myths that speak of soul, beauty, love, healing and growth, and Hagman (2009:164) argues that 'aesthetics is as important to human life as sex, hunger, aggression, love, and hate' and that 'aesthetic experience gives form, meaning, and, most importantly, value to everything we are, all we experience, and everything we do'.

Especially from an ethno-medical perspective we discover an implicit connection between the experience of beauty and a regulatory healing potential of the arts. This concerns in particular a phenomenon which has recently been termed 'transformative beauty' (Pritchard, 2014) and involves beauty as a transformative power of music (Hesser, 2001). While in some concepts and cultures the phenomenon of beauty is seen as a healing power, other positions advocate the process of transforming pain into beauty (Ettun, Schultz & Bar-Sela, 2014) and underlying divine moments (Yeh & Lin 2013) as the essence of the healing arts. With reference to Gary Ansdell and Caroline Kenny, Mercedes Pavlicevic (2005, p. 158) emphasises how scarce the discussion of beauty is in music therapeutic contexts, as well as the fact that beauty is not only a quality of the arts but also a possible human attribution.

The music therapeutic aspect of beauty is involved in music-centred approaches such as Kenneth Aigen's Music-Centered Music Ther-

apy (2005) and Collin A. Lee's concept of Aesthetic Music Therapy (Lee, 2003a). Pointing to 'musical quality', Lee (2003b) underscores that 'every note the therapist improvises should be introduced with the greatest of care. The smallest of musical ideas should have a clearly defined clinical and aesthetic structure.' With regard to subtle interdependencies between music and individual we agree with Lee, but argue that this close link should not only be seen from a structural perspective.

The notion of 'beauty' of course involves musicological and artistic views and considerations which must not be confused with music therapeutic requirements. The Japanese bamboo Shakuhachi flute, for instance, does not satisfy quality standards of a top concert flute in C. Nonetheless, its unique overtone structure and 'mystic' character may be decisive for music therapeutic effects. At an international meeting some years ago, the Turkish music therapist Oruç Güvenc presented a Kobyz and explained therapeutic features of this ancient Kazakh string instrument. A western musicologist suggested using a 'good' western bow to 'improve' the instrument's sound. The bewildered Sufi therapist refused: doing so would destroy the humanlike soul of the inner beauty of Kobyz sound. On the other hand there are experiences that a splendid piano sound can trigger trance processes, for instance, while an inferior one produces just irritating effects on the same patient. From a phenomenological point of view the issue of sound beauty and its therapeutic effects is thus clearly multifaceted.

Recent discussions in music and arts therapy have involved neuroscientific perspectives, e.g. relating to laterality in aesthetic perception (Bromberger, Sternschein, Widick, Smith & Chatterjee, 2011), neural correlates of beauty (Kawabata & Zeki, 2004), and intersections of sensory modalities and brain areas that are involved in aesthetic appraisal (Brown, Gao, Tisdelle, Eickhoff & Liotti, 2011). The development of brain-based theories of beauty have gained in importance (Ishizu & Zeki, 2011) and have led to the coining of the term of 'neuro-aesthetics' (Cinzia & Vittorio, 2009; Nadal & Pearce 2011; Conway & Rehding, 2013; Chatterjee & Vartanian, 2014).

Though neurosciences have contributed considerably to deeper insights into mechanisms and functions of the experience of beauty, this paper advocates an interdisciplinary approach. The nature of beauty is so multifarious that an adequate method for its investigation calls for a synopsis of phenomenological, philosophical, psychological, physiological, ethnological, and anthropological findings. In this paper beauty is understood as an essential force in human life and a decisive factor in music therapy and musical health practices.

Sound symbols, signs, and cues

Mr L is diagnosed with chronic schizophrenia and is a permanent psychiatric inpatient. He is not aggressive and is geographically oriented so that he can go to town. In the morning he regularly goes to the music therapy room to play always the same sounds on the keyboard. By doing so, he says, he is able to control the radio transmitter of the town and prevent world war III. This activity does not cure Mr L's schizophrenia, but it gives his life sense and balances his mood. These daily sounds stand for his self-esteem, his self-image, his work and the sense of his existence.

From a clinical perspective, broadly speaking, four different types of sound symbols can be identified. Firstly, sounds may trigger conditioned responses which are based on biographical experiences. In this case the crucial mechanism depends on the subjective equivalence of sounds from the past and the current acoustic exposure. Aesthetic criteria are irrelevant. General principles are explained by cognitive-behavioural psychology and inform basic functions of behavioural music therapy (Madsen & Madsen, 1968; Madsen, Cotter & Madsen, 1968; Madsen, 1971).

Secondly, sounds become well-defined signs and cues in therapeutic settings and entail specific therapeutic structures. Thus they play crucial roles in the treatment of patients with Parkinson's disease, for example (Benoit et al., 2014; Cancela, Moreno, Arredondo & Bonato, 2014) and other neurological conditions (Wittwer, Webster & Hill, 2013). Also in such cases the aesthetic quality of sounds seems to play only a rather marginal role.

A third perspective refers to the symbolic potentials of music. These play an essential role in aesthetics and music philosophy and cannot be separated from the anthropomorphic traits and characteristics of music. The debate about the relation between sound and symbol looks back over a long tradition (Zuckermandl, 1956) which has been greatly influenced by Susanne Langer's theory of symbolism (Reichling, 2013). This involves the question of the diverse natures of sound (Houlahan & Tacka, 2012) as well as the various ways music is meant to symbolise emotions (Budd, 1992). We see Mr L's sound production from this perspective.

The fourth type of symbolic sounds in music therapy involves a non-biological aspect of developmental psychology and represents a core moment in arts-related therapies. Pointing to the ancient Greek tradition of the 'tessera hospitalis', the founder of contemporary hermeneutic philosophy, the German Hans-Georg Gadamer (1977), refers to the arts as the complementary half of individuals, which enables them to regain their holistic entirety. While this idea can be understood as a dualistic onto-

logical principle, Jungian analytic approaches in music therapy in particular emphasise what Jung termed the transcendent function to create new symbolic possibilities for the growth of consciousness (Beebe, 2010).

By contrast, the music philosopher and founder of Polyaesthetic Education Wolfgang Roscher (1991) used to explain that a symbol is not only a sign or a label. It rather has to be understood as an entity that may concentrate and incorporate the essence of the object referred to. Opposing a view that limits music to Gruhn's triad of acoustic, structural, and hermeneutic representations, Mastnak (1995) claims an awareness of the ontological nature of music. This view suggests to understand a symbol as an entity that may create a mystical unity with an individual or any kind of reality. In terms of music therapy: a sound that incorporates the entire essence of an individual and which is thus endowed with immense therapeutic potential. This aspect leads to the notion of 'sounding selves'.

Self-expression and sounding selves

Patients use music to express their anxieties and create sound images of their hallucinations. Migrants may retrieve a part of their lost entrenchment through singing folk songs. Voice and vocal expression has the power to enhance self-awareness and to create a feeling of identity. In general, musical symbols and self-representations are culturally omnipresent and seem to point to a genuine anthropological principle: the sound-self.

Socio-culturally, this involves the issue of how music styles might mirror the spirit of an era, e.g. how Czech music of the 19th century represents national feelings opposing the power of the Austrian-Hungarian monarchy. Pathologically, this involves musicological problems such as how Chopin's oeuvre might express his epileptic disposition. From an ethno music therapeutic perspective these ideas remind us of the Indian myths of the Goddess Saraswati playing the music of creation and performing the 'essence of self'. These thoughts have led to various contemporary approaches such as Vemu Mukunda's music therapy that highlights the sound of one's own voice, in particular the 'individual groundnote', as a link between emotions and body (Dietzel, 2004).

Nevertheless there are also arguments against the notion of musical representation, mainly resting on the fact that music is not as depictive as e.g. the visual arts (Davis, 1994, p. 79). It is precisely this aspect, however, that seems to capture the nature of musical representation: the expression of psychological realities which can hardly be adequately visu-

alised or verbalised. This aspect points to the unique potential of music therapy. With regard to this phenomenon, however, we have to carefully differentiate between self-representation and self-expression.

While self-expression is a very common concept in music therapy, the philosophical and anthropological notion of self-representation is rarely used in music therapeutic contexts; one example would be the desire for positive self-representation (Daveson & O'Callaghan, 2011). Dealing with self-expression in music therapy has a long tradition (Sears & Sears, 1964). Self-expression refers to specific setting and session plans (Ragland, 1973) and involves well-defined methods like transactional analysis (Arnold, 1975). It is discussed in the context of social issues of community music therapy (Ragland & Apprey, 1974) and is used as a therapeutic means in a wide range of diagnoses such as, e.g., conduct disorders (Kivland, 1986) or attention deficit hyperactivity disorders (Rickson, 2006).

Self-expression, however, is very different from self-representation, which refers to a deeper, more qualitative and irreplaceable relation to the nature of one's self. These characteristics are found in methods that try to discover the 'sounds of the soul' and which have to do with the non-conditioned and non-pre-coined preference for distinct sounds, say those of the trombone or the Chinese Erhu. Though we have to be very careful to avoid esoteric traps, interdisciplinary considerations advocate the concept of the 'sounding self'. Although there is still considerable need for further research, we hypothesise the 'sounding self' as an identifiable entity with great importance for music therapy. This concept may apply to the case of Mrs K above and raises the philosophical question of the deepest principles and origins of sound.

Ontological and universal sounds

Unlike more formalistic and objectivistic approaches towards music as a cultural product, this paper uses the term 'ontological' according to the philosophy of being and the nature of existence. Discussing music from a philosophical perspective entails two largely contrasting positions: the characteristics of musical works in a musicological sense and the genuine essence of music in an ontic sense.

In the context of 'ontology' we have to be careful not to confuse different positions and ignore the very complex discipline of 'Music Ontology' (Bohlman 1999; Kania, 2008; Kania 2012). In the context of music therapy, the conflicting music ontological positions of realists, who posit the existence of musical works, and

of idealists, who hold that musical works are mental entities, are of particular relevance. In our discussion of sound qualities, however, we point more to the polarity between music as a process which involves the ‘action theory’ of the ontology of art (Davies, 2004) and sounds which are considered as an essence of the universe and thus of our existence in general.

While a great number of studies in music philosophy essentially involve issues of aesthetics, semantics, and interpretation (Scruton, 2009), our efforts aim at ontological and metaphysical reflections. In this context we again have to differentiate between music and sound. While music is inseparably intertwined with the human phenomenon of culture and the question about the metaphysical entity of a work of music (Bartel, 2011), ontological and metaphysical issues of sound involve both mythology and physics, and bring about novel interdisciplinary attempts to discover the nature of existence (Casati & Dokic, 2014).

These considerations involve most crucial questions of music-related philosophy as well as of cross-cultural ontology and the philosophy of existence. Such perspectives are evidently of fundamental importance for music therapy. Not least owing to Joachim-Ernst Berendt’s bestseller (2007), ‘Nada Brahma’, a Hindu term meaning ‘God vibration’ (Khan, 2004, p. 19) has become one of the best known music spiritual concepts in the Western world. Myriads of interpretations of Nada Brahma define spiritual views of the creation of the universe from the energy of sound, which is at the same time regarded as the source of existence. Facing a huge interdisciplinary complexity of positions and propositions (Huber & Thirring, 2011) we hypothesise that sound is not only the raw material for music, but an essential constituent and principle of the existent world.

Such approaches evidently inspire music therapeutic concepts, which often integrate various ethnological positions, such as, e.g., Sufism (Crowe, 2004), which has greatly influenced Western paths of Oriental Music Therapy (Tucek, 2006). In this context Chinese philosophies are of outstanding importance for the notion of harmony, which is not only to be understood in a musical or a metaphorical sense, but also as a principle of the universe and of being (Fung, 2005, 107-108; Brindley, 2012; Li, 2013). These arguments coincide widely with our standpoint.

In terms of clear therapeutic methodology, this approach is probably the most problematic in clinical practice. We cannot construct a therapeutic structure in the way we do so in for example behavioural music therapy. Assuming that music and humanity share similar vital principles, music is not regarded as a material means, but rather as an entity with fundamental curative effects. It seems that we do

not ‘apply’ music to achieve a kind of ‘sounding interaction’ but rather to help the patient to become susceptible to a sort of sound-related rebalancing and reconnection to the own human nature. In this context the term ‘quality’ refers to analogies between sound and human nature and not to primarily aesthetic criteria. Different and partly conflicting concepts of what constitutes a scientific argument play a role in this discussion.

Functional sounds

Functional sounds do not necessarily refer to artistic or aesthetic criteria. They are typically cues in therapeutic structures and processes, such as in many sound & movement-based methods in the treatment of parkinsonism, particularly focusing on gait improvement and rehabilitation (see also above in the context of sound symbols Benoit et al., 2014; Cancela et al., 2014). From this perspective they are completely different to sounds in an ontological sense. Referring to functional sounds, the notion of ‘quality’ concerns how the patient is able to discriminate sounds in a cognitive psychological sense, how they can be used as clear-cut stimuli and cues, and how they may contribute to a positive and stress-free therapeutic atmosphere.

In brief, in such applications the quality of sounds is associated with their well-defined functions: conditioning processes, structuralising stimuli, e.g. with regard to sensory-motor coordination and attention, development of behavioural circuitries that support everyday life requirements, and training which aims at a reduction of behavioural risks and accidents. Sound quality criteria depend on the patient’s individual modes of auditory perception and appropriateness to the specific task.

Treatments of speech sound disorders (Baker & McLeod 2011a & 2011b) involve a special functional notion of sound quality and complex and precisely-structured training is required. Intonation and functional sounds play crucial roles in various speech therapies such as e.g. in melodic intonation therapy (Zumbansen, Peretz & Hébert, 2014). Together with a study group, the author is in the process of developing a speech therapeutic model for children with cerebral palsy that combines principles of touch cues or more precisely ‘hands-on tactile-kinesthetic inputs’ (The Prompt Institute, 2011) with specific sound cues. Language pragmatic targets being dominant, these interventions involve also aesthetic aspects and the issue of vocal sounds, self-image and identity.

Sound, spirit, and 'epiphany'

Mrs C was diagnosed with major depression and had terminal cancer. Knowing she would die within several months, she did not accept any therapeutic intervention except pain killers and 'music therapy'. Nevertheless, according to Mrs C music therapy should not aim at classical therapeutic outcomes. Together with the therapist she wanted to listen to music by Anton Bruckner: these sound spheres would give her an impression of the life beyond death and prepare her for the transition to the next world. Her inner balance and peace and the nearly complete loss of depressive symptoms counted, in her opinion, as a 'therapeutic side effect'.

Music can trigger both autobiographical associations (Janata, Tomic & Rakowski, 2007) and affective responses. Cognitive-behavioural and depth-psychological theories provide different explanations for this phenomenon, which may be beneficial to patients with impaired memory (El Haj, Postal & Allain, 2012). The connection between sound and spiritual experiences as it is discussed in this context, however, does not refer to these mechanisms.

There are sounds that seem to enhance ingenuity, imaginativeness and creative inspiration and which do not necessarily depend on pre-established cognitive circuitries. Special sounds, such as of the Chinese double-stringed fiddle 二胡 (Erhu), tend to trigger altered states of consciousness. Such trance processes, thoroughly discussed in hypnotherapy (Barber, 2000), may facilitate the generation of novel ideas as well as the sensation of an immediate experience of truth or epiphany.

Nevertheless, a deeper analysis of these phenomena suggests that we understand sounds not only as a trigger or vehicle for altered states of consciousness and consequently only an indirect source of epiphany moments. They seem to serve as a certain source of 'inspiration' which can hardly be explained by traditional psychological theories. Viewed in this light, there are similarities between the spiritual and the ontic quality of sound.

Nonetheless, there are recent neuroscientific findings pointing to heteromodal forms of processing which we assume to be of crucial importance for sound-guided imagery. In this context particularly integrative cortical areas, such as the angular gyrus (Bonner, Peelle, Cook & Grossmann, 2013) or parts of the temporoparietal cortex (Man, Kaplan, Damasio & Meyer, 2012) seem to play decisive roles. Neuropsychological findings allow us to identify a complementary dualism: neural circuitries that represent knowledge and skills on the one hand and central nervous, sound-sensitive units that modulate creative potentials as well as a sort of 'generated inspiration' on the other.

Interdisciplinary considerations encourage us to formulate hypotheses that may conflict with classical scientific positions, but square with ethnological, mythological, and physical views: Sound as an entity contains a wealth of information in a symbolic, acoustically 'ciphered', and aesthetically condensed way. We do not label these opinions as 'esoteric constructivism', but emphasise the necessity of translational ethnological, mythological, philosophical, and physical research to elucidate related therapeutic benefits in a scientifically reliable way.

In terms of music therapy we therefore advocate a four-fold view of the (perhaps causal) connection between sound and inspiration:

- a) sounds as conditioned stimuli;
- b) sounds as trance-triggers,
- c) sounds as neuro-modulators, and
- d) sounds as entities that contain universal information.

If the last proposition is applicable, psychology has to review some well-established theories and accept the limitation of positivistic approaches.

Re-integrative sounds and novel sound worlds

There are three well-known unfavourable phenomena in patients that are caused by specific settings and experiences:

- a) long-term patients especially tend to lose their sense of individuality and increasingly identify with the self-image as an ill person;
- b) clinical environments and expectations of medical interventions cause stress and anxiety which have negative impacts on the psyche as well as the physiological system and self-healing potential;
- c) inactive phases in hospital and sensory under-stimulation may trigger pathological and pseudo-psychotic fantasies.

This has led to a huge variety of musical practices that essentially involve distraction and aesthetic stimulation. Various forms of 'life music therapy' identify different indications, for instance for patients undergoing neurosurgery (Walworth, Rumana, Nguyen & Jarred, 2008) or children in paediatric care (Prete & Welch, 2011). Music is also seen as a means of distraction in order to lower stress, anxiety, and pain levels in dentistry (Aitken, Wilson, Coury & Moursi, 2002; Marwah, Prabhakar & Raju, 2005; Singh, Samadi, Jaiswal & Tripathi, 2014) or in paediatric emergency settings (Young, Griffin, Phillips & Stanley, 2010).

While musical distraction is meant to shift the cognitive-sensory focus away from an object or to break its psychological dominance, re-integrative sounds and novel sound worlds

follow the reverse path: their therapeutic aim is to adjust the focus on realities which have been dissociated, split off, or repressed. With regard to trance induction, symbolisation, and self-discovery in musical experiences, specific sounds have a high potential to reintegrate separated components of the personality.

Such psychological processes of disclosure and revelation remind us of the phenomenon of modulation in music history. While musicology rather tends to analyse harmonic structures and to explain historical developments, music psychological considerations point to a typically psychological phenomenon: harmonic modulations as doors opening towards new worlds. Analysing, for instance, modulations in Franz Schubert's oeuvre does not only explain new ways of changing from one key to another, but can also be seen as a sort of isotypical representation of a transition from one world to the other.

This, however, goes hand in hand with a frequently observed clinical phenomenon: Music therapeutic efficacy is not necessarily characterised by gradual improvement. Sound environments and sound constellations may nearly spontaneously create new 'inner worlds' that cause decisive personality metamorphoses and dissolve pathological structures. Though conflicting with various psychotherapeutic theories, this principle seems to be the reason for a specific type of music therapeutic spontaneous healing, a phenomenon that is also known in ethnomedical contexts.

Thus we highlight a somehow 're-integrative' and metamorphic power of sound. Dissociating pathological symptoms and re-establishing an integral individuality and self, they incorporate a high subjective identity factor and represent sensory conditions which are incompatible with the pathological characteristics in question.

The aspect of perceivable re-integration and new sound worlds also involves preventive medical issues: Mr B, researcher, 48 years old, has recurrent anxiety problems, obsessive-compulsive traits and mood swings. He perceives his life in stereotypic structures with no chance to break out. Through a random acquaintance with a trombonist he begins to learn the trombone. He is fascinated by the sound, which brings back joy and an inner drive to his life. In his words, through this sound the imprisoning walls of his life tumble like the walls of Jericho. His aim is not to 'play music' but just to 'live' these sounds with 'a thousand colours'.

Natural sound and sound natures

Already four decades ago Oberlander (1979) highlighted the healing energy of nature

which is mirrored in pieces of art. The healing potential of nature has been praised in myriad contexts: as an elucidating mirror of one's soul, as a source of vitality and inner harmony, as a means that helps to readjust one's life according to one's own natural conditions.

With regard to these aspects music therapeutic domains can be seen as split up into various complementary or mutually contradictory, partly ideologically accentuated circles and schools. For methodological reasons we suggest five main positions that involve ontological, physical, anthropological, shamanistic, and organological issues.

Quite close to the considerations we mentioned in the context of ontological sound features, some music therapeutic concepts incorporate ideas which go back to Plato's notion of astral and human harmonies. Interdisciplinary interpretation of his dialogic tract 'Timaeus' (Broadie, 2012) points to a pathological divergence of cosmic harmonies and the dynamics of the soul as the cause and nature of illness. Consequently music is considered to have the potential to readjust the soul's natural harmony and thus to have a curative effect. These propositions have not led to the establishment of one single school of thought, but have flowed into a huge variety of concepts in clinical and especially in non-clinical practice. Nevertheless, in this context the 'cosmic quality' of sounds and sound proportions plays an important role, for example in psychodynamic music therapy (De Backer & Sutton, 2014, p. 62).

For instance, some music therapeutic practices are based on hypotheses about natural sounds (Rapoport, Shatz & Blass, 2008). Overtone singing and the use of harmonics play an undoubtedly important role in music therapy. Corresponding theories refer both to cosmological-mathematical arguments and to the phenomenon of sound timbres (Bunt & Stige, 2014, p. 57). There is no general scientific evidence that such sound shapes are a prerequisite for curative effects, but for all that, mathematical ratios are an important aspect in music therapeutic theories and have influenced major methods.

The term 'natural sound' also refers to the hypothesis that sounds may represent the core essence of human beings. With regard to the music therapeutic iso-principle (Michel & Pinson, 2005, p. 19), sounds are seen as incorporating the actuality of a patient's self, their irreplaceable and holistic individuality, their being 'here and now'. This aspect plays a crucial role in various ethnological practices of sound meditation as well as in Western concepts such as Sound Focusing (Mastnak, 1992). These approaches postulate a qualitative coincidence of essential individual and sound qualities.

The last two aspects above point to the intrinsic healing power of purely natural sounds or sounds which are produced by instruments avoiding technical aids. The first category comprises, e.g., the sound of waterfalls, the whistling of the wind, the waves on the sea shore, or also the sound of singing birds. On the other side we find such things as the simplicity of the Chinese 古琴 (Gu Qin) (Yung, 1997), which is called the father of wisdom, or that of natural horns and trombones. The purity of the design is in a sense understood as a way to reveal the true sound of the matter or rather of the matter's true nature or spirit.

In this context archaic, mythological, and shamanistic beliefs (Willin, 2012) are brought in: imitating the cry of a bird is meant to control its deities, using the thigh bone of a bear or the horn of a bison as a wind instrument conjures the powerful spirit of the dead animal, and the Shaman's drum which represents the 'world tree' becomes the flying horse that carries him to the spheres behind our existence. To grasp the notion of the genuine therapeutic power of natural sounds requires an understanding of such underlying theories and beliefs.

Discussion

An in-depth discussion of sound qualities also entails the problem that instruments have to tally with the therapeutically required demands. With regard to music therapeutic practice we point to three different conditions. A first aspect concerns the sound produced or shaped by the patients, be it vocal experiments or first steps to play an instrument. Uniting therapeutic and educational perspectives, such activities may give rise to an overwhelming joy of making sounds as well as the development of aesthetic ideals and expectations. The therapeutic process may result in personal transformation and growth. From a psychological perspective sounds may play a crucial role for self-expression and self-representation. This requires on the one hand adequate methods of vocal training, and on the other hand instruments which are able to produce the intended sounds. Insufficient sound quality can be seriously frustrating and harmful to educational progress. Analogously, 'bad sounds' also may obstruct therapeutic progress.

The second aspect: Mainly pragmatic music therapeutic considerations resulted in a typical selection of musical instruments, which in some cases are very closely related to the respective schools. We refer here to the use of 'Orff-Instruments' in Orff Music Therapy or the 'Gärtner Lyre' and the 'Tenor-Chrotta' in Anthroposophic Music Therapy. Another example is Irish harp, which is, on a moderate artistic level, relatively easy to play and becomes

more and more popular in music therapeutic practice. Also in common use are low-price keyboards, which are at the same time robust, portable, and need not be tuned. These instruments may be adequate for therapeutic purposes and have contributed to good therapeutic outcomes. But they are not necessarily the best choice in all cases. Notwithstanding the ubiquitous financial and technical constraints, we still need to bear in mind the adequacy of therapeutic means and, in therapeutic terms, the possible optimisation of sounds.

Thirdly, music therapy often touches on aesthetic perspectives, iso-principles, and nuanced forms of self-expression. Nonetheless, there are often very half-hearted attempts to provide sound facilities which tally with associated demands. Both the choice of instruments and their sound qualities matter in music therapy in a way which has been elucidated above. Sound qualities as we comprehend them in music therapeutic contexts, however, differ from the usual criteria as they are known in Western music history. When it comes to clinical purposes, the patient's self-awareness and the curative process are decisive for therapeutic evaluations. There are still intersections between the evolution of and the myths and beliefs about the perfect sound and music therapeutic requirements which centre around sound quality.

From a comprehensive music therapeutic perspective, the notion 'sound quality' points to both the audible sound phenomenon and the therapeutic significance of sounds. Although these aspects of the therapeutic entity 'sound' differ considerably, their multifaceted and unique interrelation seems to be decisive for clinical outcomes. To facilitate clinical music therapeutic discussion and reflection the paper suggests a theoretical framework explaining very different features and natures of sound in therapy. Further investigations in this field are still required and welcome.

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