Aesthetics: a Universal Quality of Musics Worldwide and a Biological Need

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1   Exposition

Oscar Wilde's saying "The secret of life lies in the quest for beauty" has been quoted since the end of the 19th century. Beauty seems to me an aim, whereas aesthetics might be the pathway towards beauty or ugliness, which give us human beings "good or bad feelings". Aesthetics is an anthropological universal, ideals of beauty, however, which have been defined by our cultural ancestors as being objectively true, have got modified throughout the centuries as well as regions throughout the world.

Ellen Dissanayake (1995) describes art as a means of "making special, making memorable". Investigating art – in particular musical art – is investigating behavior rather than artifacts only. In early human history, elements of art like decoratively swung lines, pleasant musical intervals, appealing forms or breathtaking rhythms have probably existed before they got assembled to create works of art because they were inherently gratifying (sensorial, emotional and intellectual), embellishing, outside the daily routine, and not strictly utilitarian, but more than necessary. The artist takes the protoaesthetic elements out of their natural context and domesticates them. Dissanayake speaks of "domesticating the natural". The desire to make something special is a biologically endowed (given) need. Art shares the "making special" aspect with game and ritual.

In his letter to Marie von Kleist (summer 1811) the German poet Heinrich von Kleist regarded music as the "root of all arts" and Nietzsche, the Prussian philosopher, poet and composer, went one step further with his remark "Without music, life would be an error" (Götzendämmerung 1889). These and many other quotes stress the importance of music for the human species. Perception of music as well as conjoint production of music have strong inte-

grating and inducing effects on humans. Music and, in particular singing, offer insights into systems of social relations, different from language and mostly unconscious to humans. Ethnological research of a foreign culture without thorough investigation of musical behavior is incomplete.

There is a world aesthetics of musics, so to say, a sort of "metalanguage". It is important to maintain the variety and diversity of musics beyond the aesthetical commonality, as a sort of mutual fertilizer for music worldwide. The term "World Music" must not be understood as an Eurocentric anthropological approach, which hopefully has been overcome eventually. Musics exist in parallel in different cultures but thus most likely will influence each other and proceed developing different musics of the world as has happened for thousands of years. Chinese music got impacted by music from the "west", e.g. form Babylon and Greece, music in Turkey developed according to Arabic, European, Islamic and Kurdish music, Japanese music has routes in China, but all of them can clearly be distinguished from their ancestors.

Defining the universal quality of art and in particular of music means to eliminate (at least reduce) cultural bias. Beauty may be culturally biased. Burke (1958) argues in the 18th century that the "sublime" and the beautiful are mutually exclusive and therefore a dichotomy. He suggested ugliness as an aesthetic quality. In order to deduce universal aesthetic qualities it is useful to form categories broadly applicable without becoming meaningless (Morphy 2006). Aesthetics per se is a means of filtering the universality as common denominator of musical art. The question to be answered seems to be: what does ethology of human music aesthetics mean today?

This contribution tries to answer this question. It starts with the parameters of music aesthetics and develops assumptions of worldwide "universals" (globally valid parameters) of music aesthetics, which I try to prove by various music-ethnological examples, it proceeds towards "Gestalt" mechanisms, which play a very important role in our universal perception of art work and in particular of music. I will describe examples for our perceptive "Gestalt" mechanisms in terms of musicology and briefly address neurobiological aspects which cannot explain our aesthetic sensation entirely, but make them somewhat understandable and plausible. It is essential to comment on temporal brain structures to better understand the effects of rhythms of music as well as of poems on our perception. I will elaborate on Kaluli and Eipo songs, two prominent ethnic groups of New Guinea as special ethnological examples for musical cultures. Then I will try to apply a classification of

worldwide music with and without references to non-musical issues. I will conclude this article with some open issues for further study.

2   Parameters of Music Aesthetics

According to Behnke (1977) the theory of aesthetics of music is a philosophy which investigates (not: defines) basic structures of music, basic criteria, relations to other kinds of art and science (e.g. mathematical and linguistic ones) as well as regarding its relevance for culture and community. Anderson (1980) summarizes aesthetics of music as an attempt to explain what music means, in particular the relation of music to the "rest of" the fine arts. He touches briefly the theory of aesthetics in China as well as in India.

According to Hesse (2003) aesthetic judgement in the Western world can be illustrated in a simple graph:
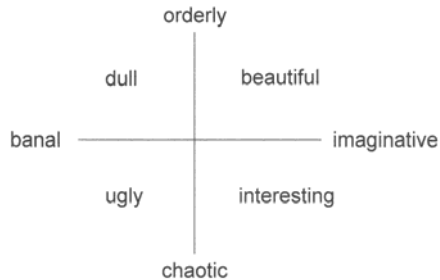

Fig. 1:   Factors of an aesthetic judgement (Hesse 2003; transl. Apfelauer)

For the aestetics of music, simplifications like in this diagram are questionable, as usual, but helpful as a hypothetical framework.

Crafting of art, like composing or playing music is a particular kind of aesthetical human activity that involves both the creativity of the producer and the capacity of the recipients to respond to and to make use of the product of art. Without the two parties, the producer and the receiver involved, a piece of art does rather not possess any aesthetic value (Eibl-Eibesfeldt and Sütterlin 2008).

Aesthetically effective parameters of music refer to its intensity, its course, its tone pitches and its characters of sounds (Hesse 2003). In general, large volume, large volume changes and strong accents like in martial music have

an activating effect, low volume, small volume changes and soft pulsation like in lullabies have a calming effect. Fast pace, frequent changes of pace, triple meter like in the waltz are regarded as rather activating, a pace close to the heartbeat in a range between 60 and 80 beats per minute without changes and even-numbered bars have a rather soothing effect. A large *ambitus*, meaning large pitch range, large intervals and upward intervals stimulate activity; small ambitus, small intervals and downwards contours seem to appease. It has to be investigated further whether these assumptions are universalities or stereotypes, considering worldwide music of all centuries.

Denis Dutton (2009) claims that there are worldwide significant and objective parameters of music aesthetics, based on subjective judgements. But this subjectivity, most likely, has an evolved biopsychic base.

Worldwide signatures of aesthetical human art (Pinker 2002) are assumed as

1. Special focus: Art is set aside from ordinary life (means "made special").
2. Expertise or capability: Technical artistic skills are cultivated, recognized, and admired.
3. Style: Artistic objects and performances satisfy rules of composition that make them recognizable, like aesthetically effective patterns.
4. Imitation: Apart from a few important exceptions (autonomous music), works of art simulate experiences of the world, physical or spiritual.
5. Non-utilitarian pleasure: humans enjoy art for art's sake, and do not demand that it keeps them warm or "puts food on the table" (Pinker 2002). This applies to composer, performer as well as to the listener, albeit composer and performer might make their living from music.
6. Manipulation of expectations of listeners.
7. Judging: People make a point of appreciating, criticizing, and to the interpreting works of art.

All of these are motives for a human artist to create a work of art. These are parameters an artist has to understand. There is another aspect as well: a certain addiction to the creation and performance of art. Why does an artist spend half of his lifetime to practice for a performance: of an aria sung in an opera house, for a gamelan performance, a sitar performance in India, for an Indian *Agnicayana* ritual of the Vedic religion, which requires young boys to memorize hundreds of lines of Vedic text in a very specific technique of recitation. Singing, dancing and playing an instrument can most likely be a sort of drug for an artist, e.g. on the stage of the opera as well as for a Kaluli sing-

er. Singing provokes a happy feeling flooding through the body of the singer. In a TV broadcast (ORF 2, August 15, 2012) Jonas Kaufmann has lately compared his emotional situation after finishing his part in Tosca with a sensation of happiness at the experience of a pole-vaulter who jumped a world record height. Somewhat he felt like on drugs.

3 Universals of Music Aesthetics

Universals are elements of music reception and music making, innate or independent of a special culture, in common for large groups of humankind. Following Pinker's list (op. cit.), it seems to me that there are universal intrinsic musical aspects of experiencing music aesthetically. There are the aspects of:

3.1 Musical tensions and relaxation

Every culture uses this principle, which was, for a long time in Europe's past, an alternation between consonances and dissonances, with an ongoing modification of their significance, for Africa tensions are produced by an overlay of patterns and sound qualities. India uses a sort of augmentation during musical pieces, which have long durations compared with western music.

3.2 Gamut and scale…

respectively intervals which are perceived aesthetically: music depends on tones and intervals which can be cognized and recognized, which means music consists of a certain number of tones and intervals which recur in a melody. Singing and speaking can be differentiated by the length of vowels sung on a certain tone, contained in a musical scale. In terms of scales, micro tonality functions in a similar way, with smaller intervals than our general mid-European music, but using the same principles. The size of intervals in music is limited by the human physiological sensitivity.

3.3 Aesthetically effective rhythmical and tonal patterns:

These patterns have quite an impact on mental processing and can be perceived as such. However, the complexity of patterns perceivable is dependent on the cultural region. Actual rhythmic patterns in music from Bulgaria are different from Mid-European music due to their various lengths of bars and

their "unusual" numbers of beats per bar. The aesthetical impact of various pattern types to humans seems to be what is universal.

3.4   Creation and manipulation of expectations

When a well-known sequence of tones, harmonies or rhythmical patterns is being distorted or changed, neuroimaging shows representation of a violation of musical expectations (Koelsch 2008). If the listener's imagined prediction does not coincide with the actual musical event, an aesthetic "experience of change" with a certain tension happens, if there is a coincidence, an aesthetic Déjà-vu-phenomenon occurs, which may manipulate a person for the better or the worse. The musical fallacy (or deceptive cadence) in Western music is a typical discrepancy between expectations of the listener and musical progression: the 19th century listener expects a cadenza, the composer writes a progression which does not comply with the listeners expectations. Refer to fig. 2: the first two chords illustrate an authentic ending in C-Major, chords 3 and 4 as well as 5 and 6 do not follow the expectation of the western listener and manipulate them. Since jazz as well as dodecaphony and most modern music avoid any expected sequences of chords, there is no fallacy any more or only fallacies.

Fig. 2:   Example of a musical fallacy, called a deceptive cadence (*Trugschluss*)

A medieval example of unexpected and surprising rhythmical changes in the Middle European music is the *hocket* or *hoquetus style*, a technique using the alternation of notes, pitches, or chords, primarily in the Notre Dame school in sacred vocal music during the period of ars antiqua (12th and 13th centuries). Alternately one voice sounds while another rests or sounds with an offset. This stylistic peculiarity made these old compositions rather fascinating for listeners. Compared with the rhythmical displacements performed by an Indian *Tala* player, this mechanism of hocket is simplistic, of course.

The syncopation in music was a means to create excitement. It could mean to change the accents within a bar *(Takt)*. Middle-European listeners expect the first and third pulse within a four quarter time to be accentuated, syncopation changes the accentuation e.g. towards the 2nd and 4th pulse, which makes us believe that a shift has been made. Another type of syncope is the missed beat syncope. Thirdly a suspension between two bars will create a sensation of metric change.

These examples are restricted to western types of music. Other ethnic groups use much more exciting rhythmical shifts, maybe they do not recognize them to be shifts but as a normal type of rhythm. With regard to the creation and manipulation of expectations, Koelsch (2008) executed a number of experiments regarding the brain responses to unexpected, music-syntactically irregular chords and the neural mechanisms of music-syntactic processing with 20 European participants with modified samples taken from classical music. His measurements of event-related brain potentials, skin conductance responses and heart rate resulted in an average gain of arousal and surprise values, indicating that the neural mechanisms of music-syntactic processing operate even independently of the emotional factors communicated by musical performance, a proof for universality.

3.5   The appreciation of competence

Human beings as well as animals admire others that are able to perform specific acts others cannot do, for example the role of the Big Man in Papuan cultures. Artists perform such specific acts.

3.6   Interaction of musician and listener and interaction between musicians

It is rather interesting how the four players in a classical German string quartet interact and communicate (Hunter 1997). Hunter proposes a social model for string quartets in analogy to the model for the dialogues in a short novel of the 18th century without a narrator, which has been described by Jürgen Habermas, as quoted by Hunter. Besides the interaction between composer and listener of the quartet without a conductor, there is this fascinating dialogue between four musicians, acting as if they were amongst themselves without an audience, a conversation in privacy. Similar to this, the intensive interactions between a *sitar* player and a *tabla* player from India is really fas-

cinating. They forget virtually their audience. Of course, dance is another important example for interaction .

3.7   Musical forms and logical sequences …

seem to be a universal quality of music aesthetics as well, in particular in absolute and autonomous music, e.g.:

3.7.1 Sequencing of comparable musical parts (Introduction, Repetition, Modification) are valid in European music as well as for classical music in India and in the Arabic world.

3.7.2 Phrasing of music, or expressive shaping of music, like changes of complexion and agogic, the latter an accentuation by extending the time value.

3.7.3 Grouping and contrasts ("horizontal" in music in India or polyphonic music like fugues by Bach) and "vertical", e.g. chorals by Bach). Examples of forms in classical music in Europe are *Vordersatz, Nachsatz, Fortspinnung, Epilog, Überleitung, Reprise*, for the music of India *alap*, *gat* and *jala,* as well as *prakar* (variations of rhythmical patterns, called *tala*). Aesthetically, grouping satisfies the holistic, self-organizing tendencies of the human brain. This is the "Gestalt" perception approach (Lorenz 1992).

3.7.4 Coherence of musical progressions, like cadences and paths of tonal modulations in Western music, the latter exists in Arabic music in a different manner when changing from one *maqam* into another. A *maqam* is a musical modus respectively a scale which evoke specific emotions. Each maqam is assigned to a certain mood or a time of the day.

3.7.5 Composition based on a few motifs and musical themes, that are getting processed and modified, carried to extremes by Brahms and his "*Entwickelnde Variation"* and ably realized in the Eipo "mot" songs in New Guinea.

4   "Gestalt" principles and perception in categories

Gestaltism aspects refer to the principal architecture of the human brain. The brain works holistically, in parallel processing, with analogies, and has self-organizing tendencies (Hornbostel 1927). From a more or less basic information stemming from our senses, our brain constructs and recognizes a "Gestalt". For example, a line evolves from a number of pixels in a certain order

(Eibl-Eibesfeldt and Sütterlin 2008). For music the process starts in the coch-lea spiral organ of our ear and creates a hierarchically organized individual reality (Louven 1998). The coherent perception deals with the relationship of the whole and its parts. Perceived information is classified, structurized, and elements are getting correlated to each other, like in an organism. Music cognition is the psychological processing of musical textures, with regard to durations, metrics, beats, articulation, forms, melodic contours, pitches, intervals of different size, harmonies, patterns and correlations between them (Apfelauer 2011). The perceptive structuring is not only formal, but also with regard to contents and quality. Cognition produces not only a reduction of the amount of data, but also quality leaps and new data originally not perceived (Ehrenfels 1890). Noises are getting suppressed.

Music cognition is widely based on the "Gestalt" mechanisms, which are an important prerequisite of music aesthetics. The human ear hears acoustic objects in its entirety before perceiving their individual parts. The Gestalt effect is the capability of our senses to generate and recognize forms (Hornbostel 1927). It was phylogenetically more important to recognize the utterance of a wild animal than to recognize single tones and sounds. Ontogenetically it is more significant to identify one's mothers voice holistically than to perceive single tones of her voice.

The cognition of music focuses on how the mind makes sense of music. It deals with the cognitive processes involved when musicians perform music. Music recognition is a human capacity that indisputably played an important role in the phylogenetic development of human cognition. The socio-emotional bonding within a group has been an important phenomenon, even if we think of the "fanomenology" of the chants of soccer fans (Kopiez 1999).

In my opinion the ways in which music can illuminate fundamental issues in human cognition have been underestimated. Aesthetics is an epiphenomenal effect, a secondary phenomenon that occurs alongside or in parallel to the primary phenomenon. Studying music cognition contributes both conceptually and methodologically to cognitive science. Cognition of music is an important and informative domain in which various aspects of cognition can be studied, in particular psychologic processes, including expectation, emotion, perception and memory, and how they apply to therapy.

Main topics of music cognition are (Daltrozzo 2009)

– Listeners' perception of grouping structures (motives, phrases, sections, etc.)
– perception of rhythm and meter of music

- expectations of structures (melodic, rhythmic, harmonic)
- music cognition of similarities
- emotional and affective response or arousal as a result of structures of music
- expressive musical performance
- conceptual processing of music structures

Altenmüller distinguishes in his contribution to this book ethologically between the phylogenetically younger aesthetic emotions without reactions of the autonomous nervous system and the older strong emotions linked to an activation of the sympathetic nervous system but proposes the "MOM" theory (MOM stands for Mixed-Origins-of-Music) which assumes that both types of emotions may coexist in human beings. In his contribution to this book Lehmann developed an anthropological toolbox to find origins for musical behaviour. He distinguishes between cognitive and physical traits of musicality.

Music cognition works based on categories, shapes and structures. Various principles of "Gestaltism" are based on Wertheimer (1923), basically developed for optical impressions. Let me try to apply them to music perception in causal relationship with music cognition principles, but keeping in mind the striking differences in the path of perception of ears and eyes. Wertheimer's principles are the following:

4.1   Principle of conciseness

Preferred perception of shapes which differ from one another by a specific attribute. There is a tendency of conciseness and perception of a structure to be as simple as possible. The brain reduces the amount of properties whenever possible. This is directly related to the question of aesthetics in the narrow sense of beauty.

In terms of music we talk about the capability to filter the fundamental frequency of a sound embedded in a number of overtones or with background noises. On the other hand, humans can hear and recognize different instruments at the same time, identify different voices and aesthetic qualities of music. Whereas humans can recognize chords, their constituent parts and their harmonic quality, generally they cannot recognize the components of mixed colours, no matter whether on a TV screen or on a coloured fabric.

4.2   Principle of proximity

Elements with marginal distances to each other will be perceived as associated.

Clearly one can think of an example in music: When tone frequencies are closer than a certain distance (measured logarithmically in the cent scale), e.g. 10 cent, we cannot recognize them as two different tones. Similarly we cannot recognize tones following each other faster than 5 ms (milliseconds), we do not recognize them as two tones (Pöppel 1988).

4.3   Principle of similarity

Similar elements will be perceived more frequently as associated than non-similar elements.

String instruments in a symphony orchestra will be perceived as associated instruments and there will be an impression of one single sound source. Whenever one violin plays an inaccurate tone however, expert-listeners as well as the conductor will recognize this single violinist out of the orchestra.

4.4   Principle of continuity

Stimuli, seemingly a continuation of preceding stimuli, are perceived as belonging together.

Possibly staccato phrases could be an example for this phenomenon.

4.5   Principle of closeness

Melody lines which border a closed area are being recognized as a unity rather than lines which do not combine to a single graph.

A differentiated evaluation of musical forms seems to be the appropriate example in terms of music. This issue has to be dealt with together with the following principles.

4.6   Principle of conjoint movement

Elements moving in one or the other (the opposite) direction at the same time are being recognized as one "Gestalt". An example could be a sequence of chords. For example, Wagner's motif of Tristan is a sequence of characteristic chords and is regarded as a unity.

4.7 Principle of continuous lines

Optical lines will be seen as if they follow the basic path. We do not perceive a line to bend in a cross point but rather to retain the direction. This principle is applicable for musical contours: two instruments of the similar type can play one melody sequentially without a break to be recognized. An example comes into my mind: in Schönberg's romantic music "Tansfigured Night" for six string instruments we hear a tonal contour which the two players create conjointly in bars 29 and 30: viola 1 reduces the loudness with a decrescendo whereas viola 2 accentuates the note played in parallel. (Violas use the Viola Key!)

Fig. 3: Principle of continuous lines

The note d is taken over by the second viola and leads the listener into the shown upward direction.

Fig.4 illustrates the principle of conjoint region, described in the following chapter.

Fig. 4:   Example for Kecak rhythms interlock (Varsanyi 2006)

4.8   Principle of conjoint region

Elements in encompassed regions will be realized as if they were belonging together. Examples are percussive *gamelan* music and its interlock technique. Eight percussive voice choruses utter in the Balinese dancing drama of Kecak, a sequence of syllables, the onomatopoetic "Kecak Kecak" and "Cak-a-Cak" to create eight different rhythmic patterns (fig. 4). The singers imitate the Ramayana Monkey Chant, they portray the warriors of Hanuman, the Ape General in the ancient Sanskrit epic "Ramayana" We can call this a polyrhythmic "rap" with a synchronization by means of a gong. The three upper singers simulate three beat rhythms within in a four beat bar. Each single voice starts staggered to the others. The second two voices use a syncopated rhythm, again being interleaved with each other. The third group changes after 3 bars to a virtual 2-beat bar. These artists learn their rhythms without any notes by several weeks of practice. What the listener hears is the summary rhythm pattern, a "carpet" of rhythms of these eight rhythms.

4.9   Principle of concurrence

If two elements get modified at the same time, they will be regarded as if they were belonging together. This is an ongoing phenomenon for Western symphony orchestras, e.g. when a modulation from one tonality to another happens. This principle is the basis for homophonic music.

4.10   Principle of adjunctive elements

conjoined elements are perceived as one object, a typical effect for orchestras of any culture as well. Melodies as well as harmonies and rhythm follow this principle

A composer of musical art is well aware of these principles, consciously or unconsciously. A musician or a group of musicians plays with these principles and gets satisfaction if some of these principles get accomplished in their performance.

5   Musicological considerations

Tones and their timing are the basis of music. Music starts with the determination of discrete pitches and discrete time intervals from a continuum of (audible) frequencies. When a tonal provision gets aligned according to its frequencies we call it a tonal system, consisting of a regular sequence of intervals, like *shrutis* (intervals in India) and *svaras* (main tones in India), half steps, three quarter steps (in Arab music), whole steps, third steps and so on in most areas of the world. There are also accidently defined tonal systems like in Java and Bali, which do not follow any mathematical rule, and which arise with the creation of instruments. A sequence of various discrete tonal lengths engender the musical rhythm. Mathematically we deal with a grid which quantizes the audible world. Musical tuning shifts the grid parallel to itself, tempo modifications change the scale in the time dimension. There are a number of exceptions like glissando, microtones and rubato which modify the shape of the grid. The third most important parameter of music is the volume (Apfelauer 2011:257).
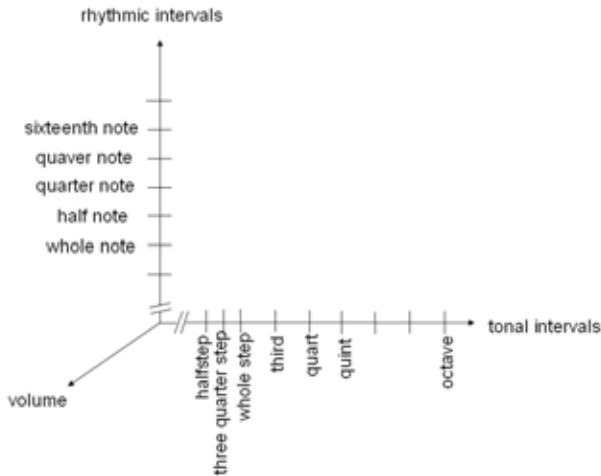

Fig. 5:   Examples for the quantification of the audible continuum as the foundation of music worldwide, quart means fourth and quint is a german term for fifth.

The theory of musical forms based on this quantification is a key component of analysis for music aesthetics. In principal, grouping of music is a universal attribute of music. Details like length and tonal contexts may be different in

different regions. I assume that all over the world, sung music can particularly be remembered by means of the text and vice versa, which eventually implies the "Gestalt".

Theoretically every music starts with the organization of the tonal material e.g. in terms of scales. The musician creates a motive using tones of a certain scale (Jazz starts a musical piece with harmonies which define the scale to be used). A **motive** is the smallest unity of meaning. It has to be memorable and should have the power to become independent. It can be repeated and modified. It can be transposed to another pitch to start with. An example for a motive could be the beginning of Bach's Brandenburg Concerto No. 3, 1st movement, three times repeated with slight modifications: 1 and 3: semitone interval, 2 and 4: whole tone.

Fig. 6:   Example for a motive

Next size element is the **phrase**, which can be sung "with the same breath". Its end suggests a comma (says Schönberg). The **soggetto** is the typical motive or a phrase in the baroque era, it has the characteristic of a musical spinning, meaning an intrinsic development of the motive. A good example of a phrase is the beginning of Beethoven's piano sonata op. 2, No. 1, f-minor, first movement:

Fig. 7:   Example of a phrase

A "**Satz**" and a "**Period**" seem to be the next size module with a unity of meaning. It consists of a group of phrases; in classical Middle Europe with an overall length of four plus four measures. An example can be found the German children's song "Hänschen klein":
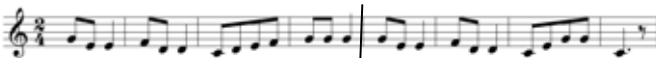

Fig. 8:   Example of a "Satz"

There are other musical groupings like the **theme,** the **group**, the **part** and the **movement**. Musical pieces have an overall shape, like the European "Lied" has. Most prominent is the tripartite melodic form, most of the time with a sequence A - B - A', with the melodies A and B, A' with slight modifications.

The **Bar** form has been used by the minstrel songs and the *Meistersinger* songs (from the 12th to the 18th century), typically with the sequence A-A'-B, called *Stollen-Stollen-Abgesang*.

Fig. 9:   Example of a medieval Bar form (Apfelauer: 2007)

An example of a more sophisticated Bar form got composed by "Wizlaw", a minstrel in North Germany (Rügen) from the 13th century, as shown in fig. 9 above. The song is contained in the "*Jenaer Liederhandschrift*", a collection of songs by different composers from the late Middle Ages, reprinted in 1963 (Gennrich 1963). The poem "Ich partere dich" is a "*Kanzone*"- type love song with a special Bar format. The notes in the style of the Gregorian Chant got transcribed into modern notation. In the analysis below (Apfelauer 2007), Greek letters on the left side symbolize the different musical contours, Latin letters on the right end denote the rhyme scheme, remarks like "5k" explain the type of end rhyme of the poem. The "5" means five accents, "k" stands for "klingend", for a sounding rhyme. The stress is on the last but one syllable. This song repeats the "Stollen" (consisting of the two lines α, β) at the end. The letters γ and δ symbolize the two lines of the "Abgesang". Slurs represent notes which are sung on one syllabe, meaning "syllabisch". "fol. 75r" stands for the page in the "Jenaer Liederhandschrift". The term "phrygisch" is the scale used in the song, the phrygian mode. The remark "holpert" (means to jolt) is an assessment of the quality of the verse. With high probability Wizlaw was a Slavic nobleman and German was not his first language. The word "parterre" seems to be a missprint of "parriere", which means "to adorn".

The hymn "Lobe den Herren", also known as a **cantata** by Bach, BWV 137, follows the Bar form as well. "O Ewigkeit du Donnerwort", the choral from Bach Cantata, BWV 20 has the Bar format: music of part A and part A' are identical in this case. Wagner uses this form several times within his opera "Meistersinger", Kothner, the baker, describes the Bar Form in the first act of the opera. A modern example of music in this format of Bar are e.g. the "Star-Spangled Banner", the national anthem of the United States.

The Blues Scheme may be called a kinsman to the Bar form, with defined harmonies of each of the 12 schemes. Measure 1–4 (I-IV-I-I) could be seen as "Stollen" A, 5–8 as A', 9–12 as "Abgesang".

$$\| \text{ I } | \text{ IV } | \text{ I } | \text{ I } \; | \; \text{ IV } | \text{ IV } | \text{ I } | \text{ I } \; | \; \text{ V } | \text{ IV } | \text{ I } | \text{ I } \|$$
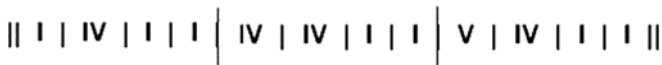
Fig. 10: The standard Blues scheme. I, IV and V according to Simon Sechter's treatise, the Roman numeral analysis of a progression of chords. (Sechter: 1854)

The Bar Format is not a universal, albeit used in many parts of the world through centuries and a good example of "Gestalt". It uses the means of repe-

tition or variation to ensure the memorization of the melody and an ending phrase to end the song.

Variations are an interesting form for the investigation of "Gestalt" properties. All musical parameters can be varied, like rhythm, dynamics, articulation, melodics, sequencing within a counterpoint setting, harmonics, colour of sound and set of different instruments without making the basic "Gestalt" non-recognizable. In Dodecaphony as well as in Bach's polyphonic music there are the mechanisms of "crab", inversion (mirroring) and inversion of "crab", meaning to read a melody from the end to the beginning or turn around the direction of intervals within a melody from up to down. Imitation, canon and fugue start sequentially the same theme in different voices and with different starting tones. Themes will stay acoustically recognizable – at least to some extent. Transcripions – if available – and its hermeneutic analysis which includes interpretation will always support the acoustical perceptibility. Variations exist in all types of good music worldwide.

Most sung music has a text, which may consist of *stanzas* and verses, generally repeating the same tune, important for the "Gestalt". Texts contain intrinsically a certain rhythm, in particular, poetic text e.g. with or without a fixed number of accents or syllables, dependent on the language.

Passacaglia is another juicy 15th century form in Spain. Starting in the 18th century it has used a constant bass melody as an "ostinato", e.g. the passacaglia in e-minor for organ by Joseph Rheinberger. The melody played on pedals does not change throughout the entire piece of music. Another example is the passacaglia in c-minor, by Bach, BWV 582. The principles of the passacaglia and the "ostinato" are rather universally used, like in the "Vamps" in jazz or the "Riffs" in pop music. In electronic music a similar formal aspect is called "Loops" alluding to the magnetic tape. Perhaps the most prominent example of an "ostinato" is the Bolero by Ravel.

A **Rondo** accomplishes the impression of form by sequencing a fixed musical part, the ritornello, with a contrasting and varying part, called couplet. The form is e.g. A - B - A - C - A - D - A. It is amazing how musicians write music, e.g. in rondo form, which seems logical to the listener. The human ability to abstract certain tones and suppress others is fantastic. The "firmware" of the human ear contains an active feedback amplification control for selective hearing.

The **Sonata** movement is a rather sophisticated European form from the classical times of Haydn, Mozart and Beethoven. It consists of three pieces,

whereas the first piece is the exposition, presenting the musical material to the listeners. The "development" follows as a second part, which "works" with the material, presented in the first part. The third piece is the recapitulation in a modified tonality. One will find very similar formalisms in Arab music, meaning to start with an exposition, a sort of prelude, proceeding with a development part elaborating on the *maqam* and its phases and closing with a sort of reprise and a coda.

The Arab *Sot* has a specific form, starting with a refrain – which begins with a single vocalist, continuing with a group of vocalists and ending with an instrumental part. There are a certain number of cycles – each starting with a single vocalist, continuing with a group of singers and ending with an instrumental part. The last cycle does not have a final instrumental part, but a *lazma*, played by an *Oud* (the Arabic lute), followed by a "*tausiha*", a single singer together with a group of singers. The *taqasim* closes the *sot* played by the *Oud* (El-Mallah 1997).

A **Rhapsody** (from *rhaptein,* Greek for to patch, to sew) was at first a poem by Homer recited by a singer. In terms of music it means a free flowing structure mostly in one set, featuring a range of very contrasted moods and musical colours, used e.g. by Paganini, Rachmaninow, but also Brahms, Liszt, Ravel, Ralph Vaughan Williams, Debussy, Gershwin (Rhapsody in Blue) and many others in our cultural area. The "Bohemian Rhapsody" from the British rockband "Queen" used this format in 1975. This form is used in most cultures worldwide.

A **Cycle** is a construction of loosely coupled parts which are associated e.g. in terms of text, or musically only. Examples are the Catholic Mass cycle, consisting of Kyrie, Gloria, Credo, Sanctus, Agnus Dei or a cycle of songs, such as the Lieder cycle "Winterreise" by Schubert.

Cycles can also be found in many cultures and ethnic groups. The Eipo – who have an exclusively oral tradition – have a musical form called **mot**, which contains several formal characteristics during its dance performance, in some cases lasting a number of nights and is always combined with dance (Schiefenhövel 1991). The Eipo know a special form of polyphony, the staggered unison entry, starting a melody in sequence but ending on a common tone, held for some time, corresponding to a corona in our Western music notation, an important way to indicate an ending of a phrase. They work with motives, which they vary and modify throughout the performance, they use primarily declining tone contours, they differentiate between motifs with a lowest

note at the end (which suggests a sort of *Tonica* to us Europeans), and finish another motive on a sort of *Dominant* (the fifth tone in a scale) as well as on the lower tone of a Tritonus (an interval of three whole steps), a sort of simulation of our musical sophism or fallacy (*Trugschluss*). In addition, they work with special vocal sounds like the "*ngalamak*", a tonal hackling and they use the vocal-fry (*Strohbass*) register as an aesthetic speciality of their music. Four different musical forms have been identified, the *mot* (a dancing *Fest*), the *dit* (a song, the *fungfungana* (a healing song) and the *layelayana* (a mourning song).

In the **mot** cycle "Das grosse Mote Tanzfest in Munggona" (Eipomek) (Simon 1993) five motives are being used only and varied slightly over time in a rhapsodic sequence. The Eipo adapt their motifs according to the text with melismas (when a melody is sung on one vowel) as well as with tonal repetitions to cope with the text. They use counterpoint-like imitations and canons. The Eipo of the 1970s did not have instruments except – apart from the mot – a mouth harp, therefore they use their voices to generate percussive sounds. The grass shirts of the dancing women create a percussive rhythmic swish. The voices are rather earthy, rough, natural, and do not fit into our European view of aesthetics of an opera singer, but definitely are aesthetical, if we eliminate culture-specific European bias of beauty.

Fig. 11: Eipo Mote Dance Fest (Photo: Schiefenhövel)
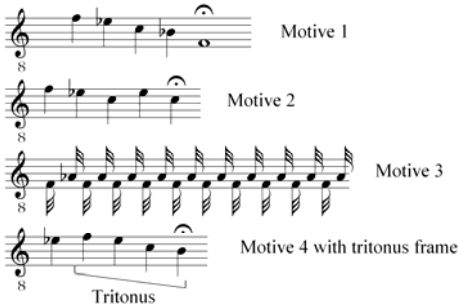
The five motives are:

Fig. 12: The motives of a special mot

The fifth motive cannot be represented in Western notation, respectively it would not make sense and would not have any informative value. For motive No. 3 above, the transcription is not very significant, though two notes can be clearly identified, different from No. 5.
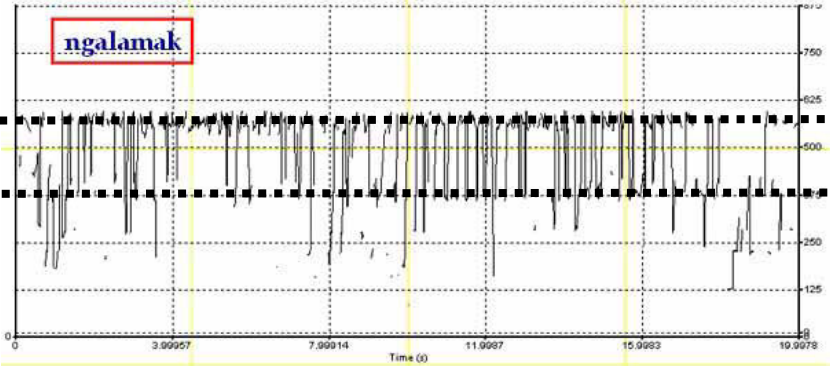

Fig. 13: Motive 5, analyzed by Praat Freeware, Saarland University: 2010

Like in other cultures, the motives are adapted according to the amount of text to be sung. This causes melismatic variations of the motifs, when a longer melody is sung on one and the same syllable. Motifs get combined. We find *occursus* type endings, which end a polyphonic part in an concordant unison single note.

Endings of music, like Finale, Recapitulation, Cadence, Coda, Codetta, Fade out and so on. It is a universality in music to use mechanisms and stereotypes to indicate the forthcoming end of the musical piece to the listener and the companion musicians. These mechanisms can be a short recapitulation of the main theme like in Jazz, the *abboga* in the Indian forms of *dhrupad* or *prabandha*, the unison ending in Eipo songs, an increase or decrease of speed or loudness of a choir, the series of cadences at the end of a composition of Dvorak with a clear conclusionary role, the so called "Bohemian ending", the drum roll at the end of a march, the cadence as an ending of Mozart's piano sonatas e.g. KV 308., the Ontro (as the opposite word to Intro) in popular western music, the simple fading out at the end of a popular record, a long melisma on one of the last syllables of text called cauda in the 13th century, a diminished 7th chord which interrupts a final cadence, e.g. in Bach's Brandenburg concerto No. 2., an increase of rhythmical intensity in the Arabic form of *Nuba* and the endings performed by an Indian *Taqsim* player, who understands to increase the tension in the audience at the end or break of a piece with his special improvisation thus to provoke frenetic applause.

There is a huge number of cadences (cadencia = falling) in Western music. They lead to an aesthetically stable sequence of chords like Tonic, Subdominant, Dominant und Tonica (numbered I, VI, V, I). They create a sense of repose or resolution. Cadences in the Western sense are progressions of chords. There are rhythmic cadences as well. Cadences existed in older tonal systems like in Phrygian or Lydian mode. In a pentatonic system Western listeners do not register cadences, due to the fact that there are no lead tones, which are semitones creating a tendency towards another tone. Other mechanisms are being used to indicate forthcoming endings in pentatonic music and in scales other than our major/minor tonality.

In medieval times there were the so called *clausula* in one of the vocal ranges. Cadences can resolve a suspension (the German *Vorhalt*). The mere expansion of the length of a note, denoted with a *corona*-mark creates aesthetically the impression of an ending, e.g. in Bach's chorals as well as in pentatonic music.

Jazz uses "backdoor cadences", cadences via a diminished seventh chord, the so-called "turn around", leading back to the tonic, the lowest tone of a scale. Modern Jazz, as well as Wagner and a lot of modern composers neglect the effect of lead tones, tones which lead in European aesthetics towards the tonic. Seventh chords are put consecutively and their aesthetical impression changes from the cadence approach e.g. towards an endless melody. Other mechanisms signal the endings, like a crescendo, a decrescendo, an accelerando, a diminuendo and many others, indicating a content-specifical conclusion.

6   Temporal music processing

A five step classification scheme (Pöppel 1988) describes the temporal processing of musical phenomena. Steps of processing are

> simultaneity,
> lack of simultaneity,
> sequence,
> presence and
> duration.

If two tones are separated less than 2 to 5 ms (milliseconds) they are not recognized as two tones but perceived as one tone. More than 2 to 5 ms between two tones is being recognized as lack of simultaneity without recognition of their sequence. Starting with 30 to 40 ms distance between two tones means a recognition of the sequence of two tones. One can compare this mechanism with an electronic flip flop (a relaxation oscillator toggles between two states and returns to equilibrium after being disturbed) with a phase length of 30–50 ms (Only one tone can be processed per phase). The fourth phase is about 3 seconds long. A certain number of tones will be subsumed as a phrase and stored and made available simultaneously. This is the duration of phrases that can be stored without distortion, e.g. used in one bar in Bach's composition *Wohltemperiertes Klavier*. The value of this duration is culture specific: musicians in India know much longer *vibhags* (rhythmic units) in a certain *tala* (rhythmic pattern); musicians in Africa have longer and complex patterns to be memorized and repeated as well.

There are clearly universal aspects for tempo relations in music, as David Epstein (1988) describes. Tempo and metering are the most important differences of music compared with all other forms of art, the scale on the timeline

as an integral part of music aesthetics. To choose the "right" tempo is a universal concern. The correct tempo is based on feelings dependent and independent of previous performances, a sort of recognition of correctness. The tempo exerts a master control over the development of all other parameters of music like phrases, harmonic progress, sections, relations or proportions. In European music of the 19th and 20th centuries a "harmonic rhythm" can be defined as a parameter of musicological analysis, describing the rate of harmonic changes, e.g. in Wagner's "Ring". All dynamic prescriptions like Allegro, Presto or Andante in scores have to be considered differently in regard to the composer and the era of composition. The Metronome invented in the early 19th century by Johann Nepomuk Mälzel seemed to be a solution. Alban Berg used a "auskomponiertes (composed, thoroughly defined) Crescendo" in his opera "Lulu", defining metronome values which change the tempo with every bar, but the Austrian composer Friedrich Cerha, who finished the third act of Berg's opera, had to admit that this system was hardly viable. In other cultures without notes (oral cultures) the musicians will remember the tempo together with the sequence of music pitches. In general, a conductor for classical music, a bandleader and a percussionist will be able to remember and reproduce a certain tempo.

7   Music and poetic metering

In general, sung music consists of a melody and a certain rhythm which is often dependent on the text. The text can be rhythmic prose or poetry or a combination of both. One of the exceptions to this principle is music sung using decomposed words, syllables or phonemes. Timing and accentuation of language is somewhat manipulated to make language "special". In general, sung music will follow the rhythm of the metered poetry, in one way or the other. Metered poetry is most probably universal for nearly all cultures (refer to Schiefenhövels contribution in this volume). Special consideration is required when analyzing Chinese or Bantu language songs, which are tonal languages with a high significance of prosodic elements for the meaning of words, which have to be taken into special consideration in poetic language and singing.

There seems to be a fundamental metrical unit of 2–4 seconds to recite (Turner 1988), the so-called "lines". These "lines" produce a pleasing sensation, a delight of verse and function as an aid for memory. Certain elements of the "line" remain constant in the poem, which create a repetition of a pat-

tern. Another universal characteristic of poems is the variation with surprising, unexpected changes to the logical pattern, like the enjambment. Only the text, not the rhythm is being modified. Changes of patterns make verses fascinating and sometimes may create cadences e.g. to finalize a certain thought. As an example for an enjambment, let me quote a humorous text by Erich Kästner about the evolution of humans and their ethology (no translation necessary):

Die Entwicklung der Menschheit (1932), last stanza:

> So haben sie mit dem Kopf und dem Mund
> den Fortschritt der Menschheit geschaffen.
> Doch davon mal abgesehen und
> bei Lichte betrachtet sind sie im Grund
> noch immer die alten Affen.

In Western poetry there is a stylistic tool called syncope, when one or more unstressed sounds of a word get lost. This is a stylistic means in poems for embellishment or for the sake of the meter. Syncopes are well known in music, when it means a missed beat or off-the-beat stress. Poetry knows also "limping verses", when one metrical foot is being changed, normally at the end of a verse, e.g. from a iambus to a trochee. These types of changes towards an unexpected progression gives the brain a "heads up, watch out" signal. A good composer will always pay regard to these textual finesses and use them in his tune.

It could be that an unexpected tone like the B or the B flat in the Kaluli song, refer to chapter 8 or maybe the Tetrachord in the Eipo *mot* create a certain arousal for listeners. More investigation would be necessary to understand the limits of exciting notes in different cultures. The fact that there exists an arousal based on unexpected acoustic events is universal, whereas the level of excitement may be specific.

8 Music aesthetics in New Guinea

The Kaluli in New Guinea are a music-aesthetically very interesting ethnic group. Probably the first European contact to this group was in 1965, when Wulf Schiefenhövel performed a field study on traditional medical beliefs and practices and was therefore one of the founders of the ethno medical research in Germany. He graduated in 1970 as MD with a thesis on ethnomedical studies at the Kaluli and Waragu in Newguinea (Schiefenhövel 1970).

The music of the Kaluli is (was) strongly determined by their environment of living. They live in the rain forest on the Great Papuan Plateau. Kaluli people think of themselves as "voices in the forest". They sing with birds, insects and water. And when Kaluli sing with them, they sing like them. Nature is music to Kaluli ears. And Kaluli music is naturally part of the surrounding soundscape. Steven Feld describes in a letter to Mickey Hart, his producer of a CD with typical Kaluli songs "*To understand how Kaluli hear this world you have to get a handle on what they call **dulugu ganalan**, or "lift-up-over sounding".* (Hart 1990). This refers to the fact that there are no single sounds identifiable in the rainforest. Everything is mixed into an interlocked soundscape. The rainforest is like a world of coordinated sounds, an intersection of millions of simultaneous cycles all refusing to ever start or stop at the same point (cp. Turner 1988).

The Kaluli in the region of Mt. Bonsavi sing to provoke weeping, their singing is a combination of singing in our European sense and sobbing, e.g. the so called sa-yεlab. Their musical tunes have falling contours, like the call of a fruit dove, as they claim, musicologically a part of a pentatonic scale. Falling contours are significant and universal for sad songs, mourning and for grief worldwide. Poetic texts are about loss and abandonment (Feld 1990), based on their myths. In a musicological sense, their singing has a clear structure, a format. According to Steven Feld (op. cit), six different song styles can be distinguished, only one of them, the "*gisalo*" (or *gisaro*) are originated from the local people and not imported from other ethnic groups. In *gisalo* as well as in weeping the pentatonic organization is the same: phenomena of nature are examples / archetypes of their music. Therefore, music is being described in a terminology of water phenomena. There seems to be some similarity with our European Music of the Romantic period, with Rousseau's "Musique imitative" or Batteaux and his Aesthetics of Imitation, as well as singular composers like Messiaen.

The most important *kaluli* style of singing is the "*gisalo"* (cp. the chapter of Wulf Schieffenhövel in this volume). Together with the singing the musicians move bending their knees, imitating reportedly the giant cuckoo dove. In the days of Feld's field study their only instrumental accompaniment were rattles made from shells, called the *sob*. Ideally the songs should sound like water falling over rocks. The singing starts with a solo singer and afterwards alternates with a chorus, an imitation in "Engführung" (overlapping entries of the same phrase in various voices as a means of climax), also called "staggered entry".

As Feld (op.cit) describes it, the music creates side associations with birds and waterfalls on the listeners. They meditate about dreamlike landscapes. They are full of nostalgic feelings of sadness about the death of friends and relatives. The singers get overwhelmed by sentiments and dumpishness. This makes them cry melodically.

On the other hand, there is no correlation between text and melody comparable with "Madrigalisms", where music interprets the text. In fact the tunes are highly symbolic and metaphoric The pentatonic tonal system is used like in a recitative. The only correlation is via rhythm and timing of the poetic language. Moreover, the text seems to be rapped. Steven Feld created sheet music, which is for sure a poor recording of the Kaluli music, as usual. Due to these notes the rhythm of the tonal sequence follows the text: Feld uses different lengths of notes (quarter notes up to 16th notes as well as triplets. The ambitus (the tonal range between the lowest and the highest pitch of a song) seems to be less than an octave.

Music of the Kaluli uses generic music-aesthetic features in accordance with chapter 3 of this article, like development and manipulation of expectations; they appreciate musical competence, they create an alteration of tension and relaxation, they use certain gamuts and scales of tones, musicologically speaking, certain anhemitonic pentatonic scales (without semitones), and patterns, which are determined mostly by the rhythm of the poem. These patterns are definitely aesthetically effective.

Feld describes a three hour event with thirteen *gisalo* songs. The text is said to be the talk of a spirit in the form of a bird. Reference is made to mountains, hills, ridges, streams, waterfalls, trees and flatlands in the neighborhood of the village (Feld 1990). The text starts with an invocation of the fruit dove. The song will be sung from the bird's point of view. A text calling out and listening for a response follows. No answer means loss and abandonment.

The *gisalo* was oriented toward making the listeners nostalgic and sad, moving the audience to tears. The performance is carefully composed and performed by a dancer showing dejection, solitude and isolation. Those of the audience who are deeply moved by the performance burn the back of the dancer. This results in a cicatrice.

The language of the text uses metaphoric linguistic forms and sound symbols. The voice of the singer is accompanied by the sound of a rattle. Text, dance, singing and rattle coalesce and the audience is moved to tears.

Compared with urban Europe, it seems, that the Kaluli have many more "artists" who create poetry. The Papuan songs seem to be comparable with the "*Gstanzl*", a Viennese cacography of the "Stanza", meaning strophe. "*Gstanz*" texts are generally humorous and underhanded and use a simple rhyme scheme and simple musical phrases. In alpine countries they were sung in singing competitions (Lehmann 2006) as well as at country wedding festivities.

The transcription of the Kaluli language shows almost exclusively words with one or two consonants between two vowels. This makes this language well-suited for singing.

An example of the beginning part of a *gisalo* (Feld 1990:187):

Fig. 14: First part of a *gisalo* (Feld, op. cit, p. 186)

The notes sketch the voices, the crosses symbolize the percussion instrument called *sob*.

The lyrics:

Hu-li-da-go-ma fi-ki-jo (5+3 syllables)
do-wo do-wo (2+2=4 syllables)
U-gu-lib li-ki-jo wo (3-3-1=7 syllables)
ne no-lo-ma-ka hoi-da-bo (1+4+3=8 syllables)
ni-mo-lo-bei mi- no-lo-bei. (4+4=8 syllables)

The "o" at he end of four lines mimics an end rhyme for us. The same applies for many other lines of the poetry. The lines end with a vowel at the end of a line, four of five lines on the vowel "O", allowing for a "staggered unison entry" of the voices when more than one singer sing together. Apparently, the prosody and the melodic inflection is taken care of in the song. The musical setting of the word "Hulidagona" with 5 syllables got transcribed as a triplet of eights notes and two normal eigths notes. The triplet returns with a very similar rhythm in line 3 and – a modified form – twice in line 5. Music functions, instead of a metric, as a poetic ingredient. For me it sounds somewhat similar to a litany or even a Gregorian Chant, with various closing formulas and final notes, although the significance of the tune in a Gregorian Chant is aesthetical and functional (to better memorize) as well.

The classical neuro-biological interpretation is that poetry enforces cooperation between left brain temporal organization and right brain spatial organization producing a stereotopic view, based on the lateralization theory (Feuchtwanger 1930). Poetic metering has a lot of similarity with musical metering. The text is the bridge between singing and speaking. Music going with the text in singing will stress the similar timing elements like poetry. During some centuries musicians did not take care of this correlation, in particular when a prose text had been used. A typical example is the music of the Franco-Flemish composers of the 16th and 17th centuries (Niederländer).

In today's music in Europe, some composers like Claus-Steffen Mahnkopf (2013) and others do not take any care at all of a word as a whole and let their singers articulate phonemes instead. There is no correlation between a text and the music in this case at all, the text gets deconstructed. Mahnkopf uses a so-called anatomic notation and uses the larynge like a musical instrument. It seems to me that there is some similarity with the ancient Vedic recitation in India (Staal 1983). Most aspects of music as an art and of singing are missing

in Mahnkopf's composition "Angelus Novus". Mahnkopf proudly states: *Es ist gelungen, die Verdoppelung der Affekte zu vermeiden (im Sinne einer Resonanz), so werden tatsächlich zweierlei Affekte erzeugt zum Thema,* meaning "I successfully omitted a duplication of affects" (in terms of a resonance). In fact, two types of affects are not being generated, (maybe not even one). Omission of a duplication of affects is what Adorno and Eisler suggested for film music also (Adorno and Eisler 2006).

Fig. 15: Musicological format of *gisalo*, organization of musical motives and weeping entry

Feld (1990) describes the scheme (in fact a musical cycle) of a certain *gisalo (refer to fig. 15)*. He uses a graph to explain the format of the g*isalo* song. There are 4 major sections: MO, SA-GULAB, DUN and. SA-GULU. MO and DUN have two subsections each. Each section consists of certain musical phrases. Each of the sections is described in terms of the cast of the performance, e.g. with or without *sob* accompaniment and notes the current status of weeping in progress. As mentioned above, the music should result in a conjoint weeping: it starts – according to Feld – with the section DUN.

9   Musical meanings: referential and non-referential

Music gets translated by individuals into thoughts and feelings. Some of the impressions will be shared within and among cultural groups. Although music is not a universal language the fact that music carries meanings in generic terms seem to be common and universal. The following chapter will investigate these commonalities. In general, meanings are created by association with other meanings formerly imprinted. Groups of meanings, however, could exist universally as an analogy for a "meta-language".

There are various attempts to classify musical meanings. "The meaning of music is more closely related to an individual perception than it is to the nature of music itself, ... dependent on the focus of attention and ... the relation to current experience" (Kaemmer 1993:108). Although meanings are primarily individual they are shared among social entities and possibly worldwide, as universal types of meanings. This makes musical meanings interesting for human ethologists. Meanings of music are not necessarily musical, they give us a better understanding, why and how mankind is fascinated by music and what music can bring about. "Exotic" music may not carry a meaning understandable to Europeans. Humans receive a huge amount of stimuli which have to be filtered and handled selectively. As described above, some criteria of selection are culture-specific, others are universal. Stimuli are meaningless if we do not react to them.

Kaemmer (op.cit. pp. 108–141) proposes three groups of generic principles of meanings. As a hypothesis borrowed from semiotics, music could have a meaning regarding to what it

(a) "**says"** (symbolical, referential),
  − denotative: literal meanings that can be understood devoid of emotion,
  − connotative: a subjective emotional association that some kinds of music carries,

(b) "**is"** (the non-referential, absolute, autonomous aspects, without function): often aspired to exclude sentiments, but rarely accomplished.

(c) "**does"** (pragmatic, valuable), more closely related to adaptive culture, (ideas, beliefs, values, and customs) than to expressive culture, manufactured objects (buildings and consumer goods). Although an evaluation of music in terms of semiotics seems to be problematical, let us follow his idea.

Type (a) deals connotatively with symbols, metaphors and metonyms. Cultural knowledge is being transferred over generations. These meanings might be religious. Some of them are highly important for emotional stability. Symbolic meanings can become manipulated for personal or political purposes. Meanings operate consciously or unconsciously, with or without awareness. The term "denotative meaning" as used by Chares Peirce for languages, cannot be taken over literally for music. Communication in terms of language is not the primary mechanism of music. Wagner's "Leitmotiv" may be a direct way to communicate connotatively similar to a language, most other types of music are not. Music is not a "Weltsprache" per se. The phrase in Ives "The unanswered question" from 1908 however seems to me undoubtedly understandable. This motif can be understood as a question by listeners intuitively in Europe and the USA, without emotional context and probably without any introduction to the concert.

Meaning, not emotions, may be formulated on purpose by the musician producing the music. Meaning may also be deduced by the listener based on his/her musical experience. Both characteristics, connotative and denotative, may apply in parallel. Similarly, messages transmitted between computers contain either all information or only references for information already available at the receiver's side, being associated contextually. Denotative meaning in music may bear similarities to well-known bird songs, thunder, French horns (Waldhorn) and so on. Connotative meanings may be not intended to be passed on by the musician and have a context-specific meaning:

e.g. music heard together with a specific experience may recall these mental associations although they are not intentionally incorporated in the piece of music. Such meanings may result from analogy with various aspects of human life.

Music, in particular songs with lyrics, often use metaphors, a rhetorical analogy, metonyms (calling something by the name of something intimately associated with) and synecdoches (e.g. "pars pro toto"). A metaphor type meaning uses an image, a story or material thing to represent a non-material thing or an idea.

A good example für connotative meanings are are the songs of the Shona of todays Zimbabwe (Kubik 1983) the artists pretend to sing about lions and birds, but in reality these songs refer to actions for coordinated uprisings, a form of hermetical poems, with similar effect on people as today's coordination of revolts via internet. Another example of symbolic and referential music can be experienced in the kabuki theatre in Japan, where a continuous drum beat means water (*mizuoto*). Complicated drum beats represent waves with iconic meaning: the sequence of beats symbolizes the direction of waves (Wade 2005). In Mid-Europe a trumpet has symbolized the power of the king and emperor for centuries. A French horn in particular the so called "*Hornquinten*", symbolizes nature, hunting and forests. A Japanese *Shakuhachi*, the bamboo flute, symbolizes the deer. Native Americans' shamanism uses imitations of animal howling for their healing ceremonies.

The music of Freischütz, Pastorale, Wilhelm Tell etc. in Mid-Europe is symbolic: music symbolizes nature, bullets, country idylls etc. arbitrarily comprehensible. The Kaluli in New Guinea imitate, as described above, the singing of birds in reference to myths and ancestors. They use a metaphoric musical meaning. They believe in a transition of their spirits into birds, the fruit doves. These bird songs are used as a metaphor, moreover as a reflection of the ancestors' spirits by the Kaluli people. When birds sing, they hear their ancestors speak to them. The falling tonal pattern is the basic scale for the *gisalo*, also used in "weeping" songs (Apfelauer 2011) with the purpose of inducing sadness. A falling tonal contour has most probably a universal connotation of sadness, e.g. the European "Lamento di Tristana" from the 13th century, the "Lamento d'Arianna" and the "Lamento della Ninfa" (1638) by Claudio Monteverdi and not to forget the "*Lamentobass*", a falling contour, sometimes as ostinato bass in European music. (Kaiser 2006). However, falling contours are not used exclusively for the symbolization of sadness.

The Kaluli singing is also an example of the third type of meaning because it is clearly functional. The attempt to cause collective weeping is always successful for this ethnic group, similar to the function of professional mourning (women who get paid to induce a sad mood) in the eastern countries of Europe and the keening (a Gaelic word) in Scotland and Ireland, all of them using falling-contour-type melodies. Banshee women in Ireland, a Celtic legacy, start wailing when an important person is about to die and induce sadness by that. The falling contour for a sad song can also be found at the Eipo population. A woman sings a song for her child who had to be brought to the hospital far away to cure a burn. Fig. 16 shows the falling contours in the sad song.
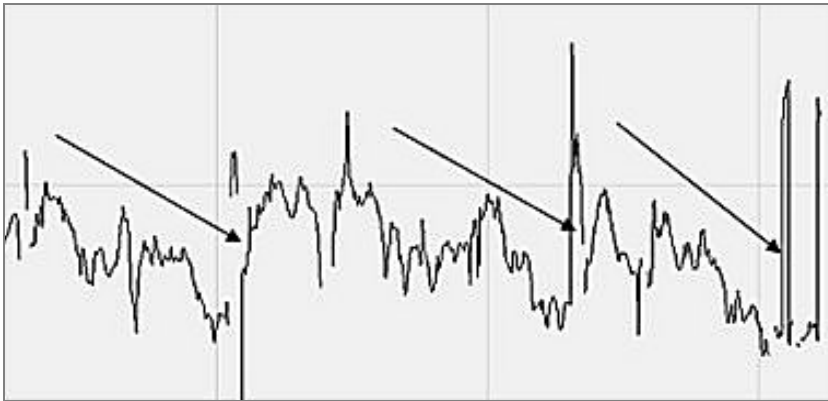

Fig. 16: 20 seconds sonagram from the sad song of an Eipo woman, frequency range scale 0–800 Hz

The ethnic group of the Hamar in southwest Ethiopia believe in *barjo*, the "driving force". Group-singing symbolize the call to *barjo* (Strecker 1979). This type of music is functional as well, it is an invocation of the spirit. Suyá in Amazonia like the music which causes euphoria, called *kin* (Seeger 1987).

Non-referential music (type b) – could be possibly a synonym for the term "Autonomous Music" discussed since 1925 (Massow 1994). Autonomous music as a music-aesthetical term for a work-immanent formation of a theory. It seems to be a music-sociological term to specify a production method for a work of art solely based on itself. Autonomous music means an immanent logic of matters of a composition, e.g. in comparison with programme music. Many musicians of the 21st century claim to write non-referential music, but often enough they don't.

Examples of the non referential, absolute music (type b) correlates often but definitely not exclusively to a written culture and music notation, sometimes with a written theory of music and most of the time in a country with a hierarchical, non egalitarian form of government. Non-referential meaning of music focuses on listeners and players taking their time to enjoy the genuine essential musical qualities rather than interpreting hackneyed meanings with turgid phrases. These qualities are not found exclusively in western music. Instrumental music in India seems at first non-referential, although there is always a reference towards *ragas*, meaning tonal systems, which themselves are referential: *ragas* coincide with times of the day and moods (Danielou 1982).

Typical for this type of non-referential meaning is the enjoyment of its intrinsic quality, without symbolic meaning. Music is evaluated merely by referring to other music: as soon as a phrase of music reminds us of a bird singing or a non-musical experience, music might be referential again. Music written by Olivier Messiaen is definitely referential, due to Messiaen's strong correlation of his music with bird songs, as well as his religious (Catholic) bias of his oevre.

The composition "Mare" by Luca Lombardi (refer to Lombardis chapter in this volume) seems on one hand non-referential, if the acoustic experience is considered only, but on the other hand uses wave patterns in his notation, in my opinion a sort of "eye music", graphically an aesthetical practice since medieval times. The notation script suggests waves, making a graphical reference to waves, visualizes various forms and lengths of waves. These types of music have at least an indirect reference to nature via its graphical representation.
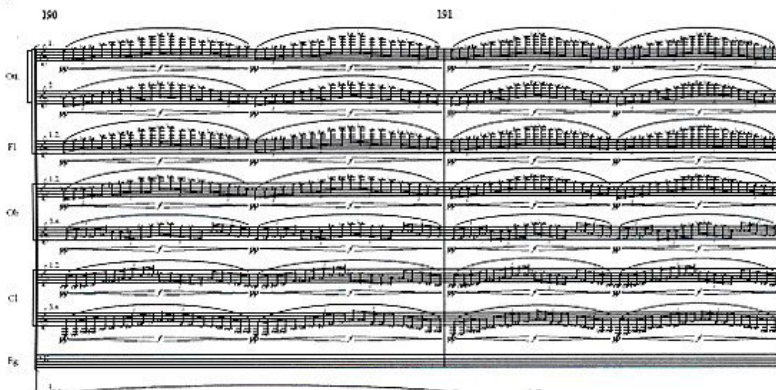

Fig. 17: "Eye music" from the score of "Mare" by Luca Lombardi

Another prominent example of indirect-referential music is the heart-shaped notation of a love song from Baude Cordier. A graphical reference has been made to the text referring to a heart as a symbol of love. In addition, red notes refer to special passages of the text, the so-called rubrification, well known since medieval times used to stress text with a holy content. It combines graphical (visual) art and music.

Fig. 18: Love song "Se cuer d'amant par soy humilier" by Baude Cordier, 15th century, (Dart 1980)

Beethoven and Haydn have been "made" non-referential by Hugo Riemann and his musicological theories at the end of the 19th century. Some musical analysis using the theory of harmonic cadences and musical forms may make music non-referential. However, it is up to the listener to define whether he hears in the "Pastorale" by Beethoven a "happy together at the countryside" and "thunderstorm" or the sonataform (Sonatensatz), a scherzo and a rondo, which might be formal and non-referential in the described sense. Here we go again with Adorno's "Expertenhörer".

An example of an egalitarian nomadic society with an oral tradition are the Tuareg, typically desert dwellers. Due to my own experiences on a journey through North Africa and statements from indigenous people, Tuareg woman-musicians are appreciated by the listeners, if they play aesthetically. Their play should have soul, it should happen "like the salt in the meal", their singing technique is not essential, but rather their personality and charisma. Intervals and phrases take away the breath of the audience (Kaemmer 1993:125). Even the augmented fourth was appreciated "as an intrinsic quality of the music" (Kaemmer, 1993:126). This seems to me a description of a non-referential aesthetic experience, without reference to birds, nature and spirits.

In cultures outside Europe, people do not talk so much about aesthetical values but rather experience them. Few ethnic groups possess a terminology to describe aesthetic qualities. An exception may or may not be the Kaluli people mentioned above. However, Steven Feld (op.cit.), who studied this ethnic group and their music thoroughly, possibly has influenced this ethnic group to talk like western people about the aesthetic parameters of their music, albeit in a completely different terminology with metaphors about waterfalls and waves.

For me, the meaning of *gamelan* in Bali is ambiguous, it may be referential but rather non-referential. It is instrumental music without reference e.g. to animal calls. It originally has been played at the court of the earls and kings of Bali and Java, primarily for their entertainment. However, *legong* dances with *gamelan* acompaniment are referential as well as highly aesthetic: every dancing figure and musical interpretation has a certain meaning.

The most striking difference regarding aesthetic values of music in the Western world on the one hand and music in the Eastern world on the other hand is that music from the West will be measured aesthetically in terms of its originality, music from the East is always measured according to the state of perfection of this type of traditional music.

A most important difference between Africa and Europe is the preference of the African people for droning, buzzing, intensified tones and sounds (they call their sound soft, we would call this sound noisy). A smooth tone is regarded as contrary to the ideals of European music. Tones in Africa, as played on the Malimba in Tanganyika have to be characteristic, which is implemented e.g. by the use of small rings of sheet metal loosely put around the metal keys making a noisy sound with every tone. (Kubik 1983:29, translated). In Buganda, they use rings made from the skin of a saurian animal closely put to each string of the eight-stringed Kiganda harp which produce a vibrating, droning sound. Jazz with strong routes in Western Africa uses the so called "dirty notes", which definitely would be faulty in classical music. Sidney Bechet for example played the soprano saxophone, which he preferred due to its dirtiness of intonantion: he flatted every note, thus producing blue notes and "Africanizing" music (Behrend 2011) The understanding of "beautiful" seems to be different, but both musics have in common to be aesthetical.

The music of the Kaemmer's type "Does" (c) can be found very often: this type of music serves a certain purpose. For emperors, revolutionaries, healers, functions as a kind of manipulation or as a means of cooling down hot tempers. Soccer group songs function as a social mechanism of identification (Kopiez 1999). Another typical example are the *fungfungana* songs, (cp. the Schiefenhövel chapter in this volume) a spiritual healing "rap" at the Eipo population in Newguinea with high-frequency suction sounds (up to 6000 Hz due to an analysis by the software program Wavelab), every couple of seconds. Eipo themselves do not classify this utterance as singing or music. Fig. 19 shows a sonagram of a fungfungana with alternating regions of rap and suction sounds, called inspiratoric phonation).

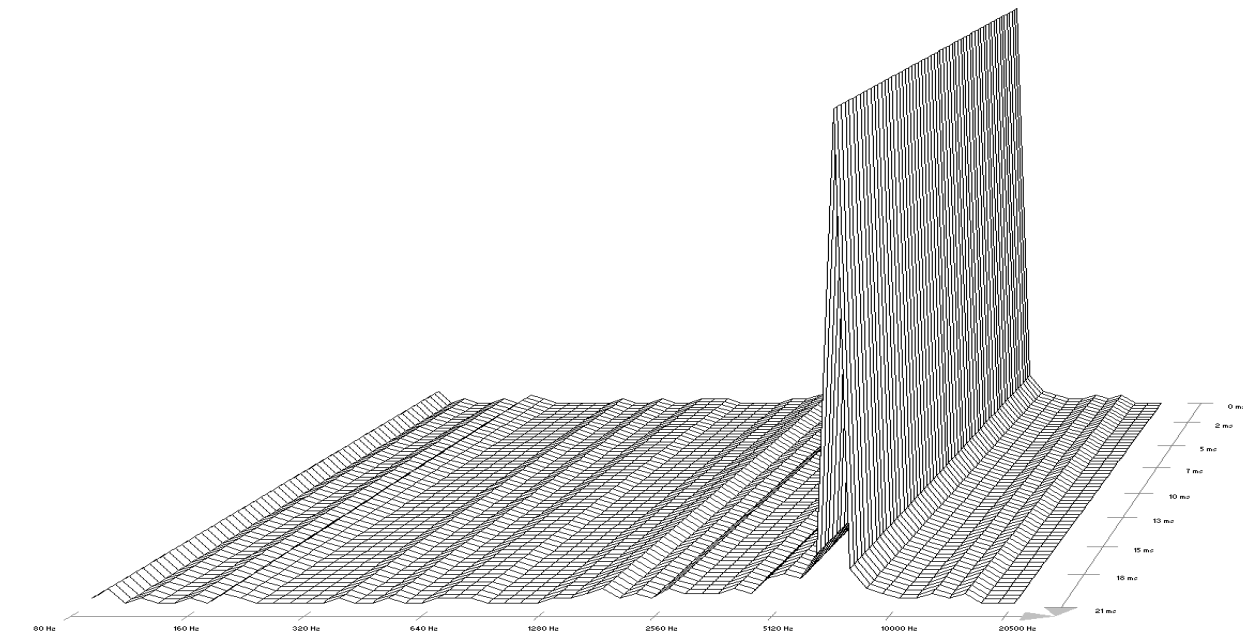Fig. 19: Example for a Fungfungana, spectrum of rap and suction sounds

Fig. 20: Frequencies within the spectrum of the fungfungana sound (20 ms length sample, frequencies 600-10000 Hz, Maximum at appr. 6000 Hz

A similar but twofold differentiation of meaning is used by the Italian composer Luca Lombardi in his contribution to this book: in the composer's view there is an "immanent motivation of music" and the "extra-musical motivation of music". Immanent means a sort of absoluteness, using certain rules and based on curiosity and creativity, it is self-referential and it needs a contextualization through the interpreter as well as the listener. To Lombardi extra musical motivation seems to me a synonym for functional purposes like a religious, ritual or political one, somewhat different from referential. This type of music would not be absolute.

Most music seems to me a combination of both types, anyway. In Europe, composers of the 20th and 21st centuries prefer to write music without correlation to any non-musical environment, they do not dare to concede any non-musical correlation, maybe based on the traumatic experiences of World War II and its history of criminal functionality of music.

10   Coda

In investigating universals of musics worldwide, this article followed a principle of Human Ethology: *Ausgehend von der Überzeugung, dass alle Menschen auf der Erde eine biopsychische Einheit darstellen, ist die Erforschung von Universalien dabei ein Ziel, ein anderes ist, die jeweiligen kulturspezifischen Ausprägungen zu verstehen* (translated by the author: "Based on the belief that all people constitute a biopsychic unit on earth, the study of universals is a goal (of Human ethology), another one is to understand the respective culture-specific characteristics.") (GfA 2010). As a matter of fact, universals exist both for music reception as well as for performing and composing of music.

In fact, there are still many open questions regarding the universals of music, in particular regarding the quest of beauty: how broadly do we have to define a supraindividual beauty? What about music written with the intention to poleax, to shock listeners, e.g. Schönbergs "A survivor from Warsaw", op. 46. It may move listeners to tears like music of the Kaluli, but with completely different means, it creates definitely an aesthetical experience, it is probably an aesthetic piece of art, but it is by no means beautiful. There are definitely a lot of examples along this line in visual art, too. Maybe we have to consider the approach of an aesthetics of ugliness (Rosenkranz 1853). Today's art is permanently in search of prospects to transcend boundaries (Eibl-Eibesfeldt 2008).

Another open point for further study seems to me the question of functionality. There are four vectors of the theory of evolution (Tinbergen 1963): a procedural, an ontogenetic, a phylogenetic and a functional. Each of these vectors can be investigated separately due to this approach. The branch "functionality" can hardly be tested or empirically falsified (Menninghaus 2011). In my view, music cannot be proved to be a direct criterion of human sexual selection. Darwin did see a broad spectrum of non-sexual function of vocal calls (Menninghaus 2011:80). Music, in particular singing, can be a means of cajoling and flattering. Human singing should not be mixed up with utterances and drumming directly related to or preparing for copulation e.g. of primates. Humans are more complicated than their animal ancestors. As shown in chapter 9 of this essay, most human music is not directly related to functions. Good "vibrations" for the listener do not mean necessarily sexual arousal. Farinelli, the celebrated Italian castrato singer of the 18th century, caused woman listeners to get sexually extremely excited, but with no perspective of reproduction. Strangely enough, Farinelli achieved this enthusiasm by singing with Soprano voice. Music has definitely a more complex impact on humans than the logical binary compound of the classical logic. In my view, Altenmüller's MOM theory meaning Mixed Origins of Music (refer to Altenmüller's contribution in this book) implies a complex Mixed Effects of Music (MEM) theory.

More investigations are also necessary regarding the composer and their composition. Why do composeres compose? Luca Lombardis contribution is very interesting in this regard. The comparison of compositions with games is a promising ethological approach. An attempt to define the kybernetic process for composing has been made by the author (Apfelauer 2011). A comparative investigation of commonalities for rationales and motivations why musicians (in New Guinea, India, China, Eastern Europe and Mid-Europe and all other regions of interest) compose and / or perform music could be very promising: more research is to be done.

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