THE GROOVE OF HARD ROCK AND HEAVY METAL

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Abstract

A lively groove in, for example, AC/DC is often created by the very subtle use of phrasing which is between "even" and "swing" phrasing, that is, "slightly swinging". In contrast, strictly *even* phrasing gives a more aggressive feel, as in Children Of Bodom. Groove is often also varied within a song. Furthermore, the concept of time-feel and the interplay between the musicians in a group are important factors that make bands like Black Sabbath sound heavy. Since groove can be studied, it can be practiced and taught systematically as well. The teaching of groove involves specific exercises in phrasing and timing.

Introduction

Groove can be defined as rhythmic intensity. A musical groove is generally associated with physical movement, such as dancing, and a sensation of pleasure (Danielsen, 2010a; Davies, Madison et al., 2013; Senn & Kilchenmann, 2012). The main questions are: how is groove created and performed, and what kinds of different grooves are there in hard rock and heavy metal. Additional questions are: what makes heavy metal sound heavy and aggressive, how is a particular band's characteristic groove created, and essentially, how can groove be practiced and taught.

The background of this study is my experience as a musician and teacher at the Helsinki Pop & Jazz Conservatory, and it is a part of my doctoral thesis at the University of Helsinki.

The methodology includes analysis of recordings and of pedagogical methods I have used, as well as a study of the literature on these topics.

Timing

Groove is built on, but clearly distinguishable from, timing (Abel, 2014; Friedland, 1999). Groove and timing are closely related since they are both subtle rhythmic elements. Timing can be defined as rhythmic fine-tuning (Wahlström, 2008) or as the ability for temporal accuracy (Abel 2014). Therefore, phenomena belonging to timing operate on a microrhythmic level, that is, rhythmic details that are more intricate than what can be transcribed in standard notation (Danielsen, 2010).

The effect of timing

First, a decent control of timing gives the musical performance qualities that could be described as solidness and convincingness. Good timing makes playing or singing sounds cohesive, whereas poor timing makes the music sound unsure and halting, as if it is falling apart. Since these differences are on a micro-level of rhythm, a performance can be executed correctly in a metrical

sense (i.e., exactly as written in notation) and still suffer from bad timing. (Danielsen, 2010; Friedland, 1999).

Second, in addition to the coherence that precise and good timing creates, it also gives music a sensation of continuity, a consistent flow. In contrast, poor timing makes even an errorless performance sound fragmented. The qualities of both coherence and consistency that are created by timing are essential in creating a groove (Abel, 2014).

Practicing and teaching timing

Subdivisions and microrhythm

Based on empirical material, the first, fundamental method of practicing and teaching timing is based on the idea that the hihat hand of a drummer is the foundation of all the instruments in a group. In all forms of rock music in which the drums play a *beat*, the hihat cymbals' consistent 8th notes can be regarded as the common factor tying the whole band together. Similarly, the consistency of the drummer's hihat hand is the symbol of the rhythmic flow, which can be applied to all instruments. In terms of music theory, the omnipresent 8th notes form the rhythmical subdivision which then results in the rhythmic fine tuning. This detailed level of rhythm is called microrhythm (e.g., Danielsen, 2010). The aim of this method is to ingrain the consistently flowing feel of 8th notes to everything that is played in order to fine tune the timing, especially during syncopation and rests, which are generally the parts in which rhythmic precision is hardest to maintain.

This first method can be divided into three steps. All three should be done repeatedly for an extensive time using a metronome, a drum machine or a click track.

The first step is to play even 8th notes in a way that most resembles the hihat cymbal. For example, a guitar player or a bass player can play completely muted strings, and use downstrokes if a pick is used. This consistent movement is very close to playing a hihat cymbal. The purpose is to fine-tune the 8th notes to be as even as possible, and the general feel of the playing to be as relaxed and consistent as possible. Furthermore, the aim is to feel the steadiness of the rhythm physically.

The second step is to integrate the consistent 8th notes with any part that is being practiced. This integration means that the notes of the part are played normally, but all rests and long notes are filled with the muted 8th notes which were practiced in the first step of this method. The result is that a part is being played with the consistent hihat hand ingrained. This serves two purposes. First, all rests and syncopations are automatically fine tuned and played with more precision as a result of the rhythmic support provided by the omnipresent 8th note subdivision. Second, the consistency of the hihat hand is integrated with the part being practiced, and this is essential for developing a constantly flowing rhythmic feel.

The third step is to remove the muted 8th notes that were previously used for filling the rests and the long notes. In other words, the part is now played as it will be finally performed, but the crucial point here is that the omnipresent hihat hand should still be maintained both physically and mentally. Physically, the constant 8th note movement still silently keeps the steady pulse and consis-

tent subdivision as in previous steps. For a guitar player, for example, the difference is that the picking hand is now playing in the air what used to be a muted filling note in the previous step. Mentally, it is advisable to sing internally the 8th note groove, as this clearly adds precision to syncopation and fine tunes the rests as well as the lengths of the notes.

Another method of practicing timing is to play using a metronome and in a 4/4-time signature having the click only on certain beats, most commonly on beats 2 and 4 (Friedland, 1999). This is essentially characteristic to all popular music, and it is a key element in creating a groove as opposed to only aiming for timing accuracy. Having the accents on beats 2 and 4 is traditionally referred to as *backbeat*, and once again relating to the drum set, it is what the snare drum is playing in a regular beat. The link to groove is that it creates an effect of moving forward, as opposed to having the click or accents on beats 1 and 3, which results in a static, stomping feeling. In developing rhythm skills, it is also important to be able to independently start a rhythm part when having the click on beats 2 and 4 and not to confuse it with 1 and 3. This develops flexibility in the sense of rhythm, and it is crucial in internalizing the grooviness of rhythm, which must first be mentally heard before it can be reflected in a musician's playing.

The more demanding version of this practicing method is having the click on only beat 4 (Friedland, 1999). This establishes the practicing musicians internal timing. The player must independently maintain a steady timing during beats 1, 2 and 3 and still match the click on beat number 4. The student should become independent of an external source, such as the metronome, when doing this and still meet the click on beat 4.

A third method of practicing timing is to practice at a much slower tempo than the original. For example, a rhythm part which is originally in a mid-tempo, such as 120 beats per minute (BPM), can be practiced at the very slow tempi of 40 and 50 BPM (Friedland, 1999). Naturally, this should be done with a metronome or a drum machine. Generally, slow tempi are much more demanding to perform with precise timing than faster tempi. The advantage of this method is especially that the slow tempi reveal inaccuracies in the length of the notes. To create decent timing and a groove, the precise finishing of the notes is as important as the start of the notes. This is essential in acquiring a quality of tightness, which is also essential in hard rock and heavy metal.

These exercises can be applied to any musical material. This gives the teacher an opportunity to use student orientedness when teaching (Wahlström, 2008). Furthermore, an example of good practicing material is any riff of AC/DC's. When watching AC/DC's rhythm guitar player Malcolm Young play, it is evident that the aforementioned active physical movement of the picking hand also during the rests is essential (AC/DC, 1996). The constant activity of the picking hand can be detected by listening to the intro of "It's A Long Way To The Top (If You Wanna Rock And Roll)" (*High Voltage,* 1975). Here, ghost notes of the aforementioned muted strings occasionally fill the musical rests.

The concept of time feel

Time feel is a subtle art that gives the music a rhythmic nuance. Different time feels are created by manipulating timing on a very small scale (Berliner, 1994; Friedland, 1999; Liebman). Comparing a musical performance to the absolute timing (i.e., a click track or a metronome), three main types of time feels can be distinguished. The tempo is not altered by manipulating the time feel, in-

stead, this dimension of rhythm is created by relating the playing to the absolute time in different ways (Friedland, 1999, pp. 48, 83).

First, a heavy and relaxed feel is created by playing slightly after the beat. This time feel is commonly referred to as laid back, or playing behind the beat (Berliner, 1994, p.151; Friedland, 1999, pp. 48, 83; Liebman). An example of this can be heard on the verse parts of AC/DC's "Rock And Roll Ain't Noise Pollution" (*Back In Black*, 1980) [01:07-01:28]. For comparison, the live version of the same song on the video *AC/DC: No Bull* (1996) [01:09:41-01:10:10] contains a laid back feel to a lesser extent, although it must be pointed out that the tempo is also slightly faster.

The second category is playing as precisely with the click as possible, in other words, trying to not manipulate the time feel at all. This is called playing on the beat, on top of the beat, or in the middle of the beat (Berliner, 1994, p.151; Friedland, 1999; Liebman), and it gives the music a neutral character.

The third category is playing slightly before the beat, or ahead of the beat, creating a hectic and energetic rhythmic sound (Berliner, 1994, p.151; Friedland, 1999; Liebman). This time feel is utilized, for example, by The Hives, and can be heard on the songs "Die, All Right!" and "A Get Together To Tear It Apart" (*Veni Vidi Vicious,* 2000). Generally, it can be said that a laid back feel can make music sound slower than it actually is, and playing ahead of the beat can make music sound faster than it actually is.

From a pedagogical point of view, experiences of teaching have shown that learning to play with different time feels happens most effectively by playing along with different recordings. Students can generally adapt to a songs feel using emotional tools, that is, mental images (e.g., emulating a "lazy" mood to create a laid back feel, or "hectic" to play ahead of the beat). The results have been weaker when the intellectual or theoretical terms have been used exclusively, for example suggesting a student to play "behind the beat" or "ahead of the beat".

The relation between timing and groove

In addition to timing, groove involves phrasing. The results presented in this paper show that a loose-but-tight groove is often created by the subtle use of phrasing, which is between "even" and "swing" phrasing, that is, "slightly swinging". In contrast, a strictly even phrasing gives a more disciplined and aggressive sound that is characteristic to heavy metal.

The effect of phrasing on creating different grooves

Perhaps the most essential aspect of groove in this study is revealed by comparing two versions of AC/DC's "Hell Ain't A Bad Place To Be": the original studio recording on the album "Let There Be Rock" (1977) and the live version on the album "If You Want Blood…You've Got It" (1978). The focus is on the main riff, which is heard in both versions at approximately [00:34-01:21]. Teaching experiences have shown that students of any level notice that these versions sound different, and the students' descriptions of these versions are consistently similar. Commonly, the studio version is described as stiff and disciplined, and the live version as more lively, relaxed, loose-but-tight, flexible and moving ahead.

A closer listen reveals that the studio version is played using a strictly even 8th-note phrasing, whereas the live version is played with a *slight swing feel*, using a phrasing that is between "even" and "swing". The swing feel here is so subtle that it clearly is still a straight beat, only with a little twist that creates that moving effect. The two versions would be notated exactly identically.

The slightly swinging phrasing is very common in other forms of popular music, such as funk, soul, rhythm and blues, disco, country and jazz. As an alternative, the term participatory discrepancies has been used for rhythmic unevenness by academic studies concerning the groove of a jazz rhythm section (Keil, 1987; Keil & Feld, 1995; Prögler, 1995). In research on the groove of jazz, the measure of *swing ratio* has been used to describe numerically the amount of a phrasing's swing feel (Zagorski-Thomas, 2007; Friberg & Sundström, 2002).

Outside the fields of hard rock and heavy metal, the 16th notes of funk music are hardly ever played evenly, also when it is not concerning a clear 16th-note shuffle. Good examples of these kinds of grooves can be heard on James Brown's 1970 "Get Up (I Feel Like Being A Sex Machine)" [00:14-02:11] and his 1971 "Soul Power" [00:00-01:08], or the Red Hot Chili Peppers's "If You Have To Ask" (*Blood Sugar Sex Magic* 1992) [00:00-00:49]. It is noteworthy that many of the aforementioned genres have involved dancing, as is the case with disco, for example. Therefore, it becomes evident that it is essentially the slightly swinging phrasing that creates the phenomenon generally referred to as "groove".

Moreover, it is clear that hard rock utilizes the slightly swinging phrasing more commonly than it is generally acknowledged. The vocal phrasing of Brian Johnson on AC/DC's "Back In Black" (*Back In Black* 1980) [at 01:23-01:25] is a prime example, as well as the guitar lick on [00:09-00:10] on the same track. This phenomenon is also essential in the whole repertoire of Led Zeppelin, for example, "Whole Lotta Love" (*Led Zeppelin II*, 1969) [00:46-01:08].

Heavy metal is generally associated with aggressiveness, power, discipline and rigorousness (cf. Lilja, 2009, pp.21-47). These traits are much like the associations given by the students regarding the studio version of AC/DC's "Hell Ain't A Bad Place To Be" (*Let There Be Rock* 1977). The effect of a strictly even phrasing is evident in the verse riff [00:34-01:08] of Pantera's "Cowboys From Hell" (*Cowboys From Hell* 1990) and in two different grooves of Pantera's "Domination" [00:30-01:04] and [3:51-05:04] on the same record. For a more recent example, the same kind of phrasing can be heard on Children Of Bodom's "In Your Face" (*Are You Dead Yet?,* 2005). The common factor with these examples is that the evenness of the 16th notes creates the aggressive and disciplined feel that is characteristic to the genre.

Practicing and teaching phrasing in order to create a groove

The pedagogics of groove have been little studied. Traditionally, informal learning of groove may happen subliminally and naturally when a band plays together over a period of time. The systematic teaching of groove differs from this in that the student is more aware of the process and deliberately controls the acknowledged components of groove. Since it is possible to examine groove as the result of, at least, timing and phrasing, it can be fragmented into a systematic exercise, which is described next. The main source of this section is the empirical material gained from teaching experiences.

One possible method is to practice the same rhythmic motif in three different versions: a strictly even phrasing, a clearly swinging phrasing, and finally something between the two a slightly swinging phrasing. Once these are mastered to the point that they can be clearly distinguished from each other, an effective exercise is to execute the different versions consecutively, and repeat this. In a funk music example, the main rhythm figure of Red Hot Chili Peppers's "If You Have To Ask" is a one-bar-long phrase. It could be practiced by playing the following sequence: 1) four times (i.e., four measures) using even 16th notes, 2) four times clearly swinging 16th notes, and 3) four times slightly swinging phrasing, and then repeating stages 1-3. This is effective, for instance, using a drum machine, which loops a drum beat that is based on 8th notes, thus allowing the player to use any kind of phrasing concerning the 16th notes.

Once this is mastered, the next method of practicing would be to play the same piece along with the original recording. The purpose would now be to fine tune the phrasing to be as similar as possible to the recording. Desirably, the player's perception, awareness and control of different amounts of swing feel grows when first practicing the different versions as described above. As a result, the player can now lock in more easily with the groove that is heard on the recording. Ultimately, when playing together live with other musicians, this skill enables one to play more flexibly and communicate better regarding groove. Evidently, the *tightness* of a band is largely determined by this communication, *active listening* and the *responsiveness* of the players involved (Berliner, 1994).

As already mentioned, the slightly swinging phrasing is more commonly acknowledged in funk music than in hard rock. Therefore, it can be natural to transfer it from a funky feel to hard rock when practicing the following way. Again, AC/DC's "Hell Ain't A Bad Place To Be" is a prime example. It can be practiced by playing it over a drum loop, which is occasionally in a half time feel, making the guitar riff sound like it would consist of 16th notes instead of 8th notes. Then, the same method as described above concerning the practicing of funk phrasing can be utilized. The riff would then be played using 1) a strictly even phrasing, 2) a clearly swinging phrasing, and 3) a slightly swinging phrasing. Next, the slightly swinging phrasing, which sounds natural in this funky 16th note groove, is transferred to hard rock by playing it the same way also over the original 8th-note-based drum beat in abandonment of the half-time feel. The round and relaxed feel of the 8th notes is now, obviously, the same as that of the 16th notes used during the occasional funk version when practicing. The resulting groove sounds very similar to the feel of the live version of "Hell Ain't A Bad Place To Be" on *If You Want Blood…You´ve Got It*.

On a pedagogical note, the practicing methods described above can be applied to any rhythm figure. What kind of phrasing should be used is a matter of one's sense of style. Groove, and phrasing in itself, is naturally not bound to any specific genre, but common to all styles of music. This allows the teacher to use student orientedness when teaching. Any material that the student wishes to study can be examined, taught and practiced using these methods to acquire the desired groove (Wahlström, 2008).

Implementations of groove

Furthermore, groove is often manipulated within a musical piece in order to create *variation* between the parts of a song (Friedland, 1999). Groove is also essentially related to the instruments' different functions within the group,

and this interaction gives a band its signature groove (Keil, 1987; Keil & Feld ,1995; Prögler, 1995). As an example, a closer study of Black Sabbath has shown how the time feel of the drums affects the sound of the whole band.

Dramaturgical arc and variations of groove within the structure of a musical piece

Phrasing can be utilized in an expressive way from a horizontal point of view regarding the structure of a complete musical piece and not only separate parts of a piece. One part may be played with an even phrasing and another part with a slightly swinging phrasing. This gives a piece variation, a dramaturgical arc and a forward-moving sensation.

This can be heard on Soundgarden's "Spoonman" *(Superunknown, 1994)*. The song's main riff [e.g., 00:00-00:47] is played using very even phrasing. This becomes clear when listening to the snare drum during the last beat of the riff. In contrast, the chorus part of the song [e.g., 00:43-00:53] has a very slight swing feel. This may partially be the result of the legato technique used in the guitar part, but it is also evident when listening to the 16th note syncopation of the snare drum. In addition to the variation created by the drum part shifting to the ride cymbal and the riff suggesting a harmonic movement to the fourth chord degree as opposed to the previous centre of the first degree, the effect of the different groove is that the chorus part lifts and opens the whole piece. The chorus part sounds lighter and has a feel of moving forward, as opposed to the stiff and more closed feel of the main riff. The slight variation of phrasing gives the song more versatility.

Aerosmith's "Sweet Emotion" (*Toys in the Attic*, 1975) presents the same phenomenon, although in a contrasting way. The verse parts [e.g., 00:56-01:15] have a slightly swinging 16th note feel, and the variation is created in the interlude part [e.g., 01:15-01:25] in which the 16th notes are phrased very evenly. The verses sound relaxed and airy, and in stark contrast the interludes sound very stressing, stiff and energetic. As an additional example, the main riff of Pantera's "Cowboys From Hell" (*Cowboys From Hell,* 1990) [00:15-00:32] is slightly swinging as opposed to the verse riff [00:34-01:08] which is more even.

Groove and the interplay between the musicians in a band

The term "Heavy Metal" may refer, at least, to the "metallic" effect of distorted guitar sounds. The "heaviness" can be examined from a rhythmic point of view. Black Sabbath, sounding dark and heavy, belongs more to the genre of classic heavy metal rather than hard rock. Here, the aim is to study what rhythmic quality causes this.

The song "Sabbath Bloody Sabbath" *(Sabbath Bloody Sabbath,* 1973*)* exemplifies this distinctive heaviness. The guitars are tuned lower than standard tuning (e.g., notable on [03:19-03:59]), and the guitar sounds are more distorted than in other bands of the same era, for example Led Zeppelin, Aerosmith or AC/DC. Concerning rhythm, and more specifically, the individual instruments' functions in the band, the main riff heard in the intro and the verses reveals an interesting notion. Quite clearly in the riff part before the second verse [01:11-01:25], the drums are played more laid back, or behind the beat, than the rest of the instruments. The lazy time feel is especially evident in the first bar of the two-bar riff, and it is coupled with the heavier and deeper sound of the tom tom drums instead of the standard snare drum.

The fact that the drums are more laid back than the rest of the band makes the whole band sound heavier, as if the drums would be dragging the bass and the guitars. This result of the interplay between the musicians becomes evident when comparing the aforementioned riff part on the original recording [01:11-01:25] to a live recording with entirely different players on Ozzy Osbourne´s album *Speak Of The Devil* (1982) [01:11-1:25]. The latter version sounds lighter and brighter, and the drums are clearly less laid back. Therefore, it can be said that this phenomenon gives Black Sabbath a characteristic rhythmic nuance, which *creates the band's significant groove.*

This phenomenon has been previously studied academically in the context of a jazz rhythm section. Notably, the concept of participatory discrepancies (Keil, 1987; Keil & Feld, 1995; Prögler, 1995) involves the same point of view, saying that the source of groove is that the musicians in a group are slightly out of time with each other. As Prögler (1995) has pointed out, both musicians and analysts have disagreed about whether the cause of groove is this discrepancy or its complete opposite, that groove is the result of the musicians playing precisely together. However, it must be said from a pedagogical point of view that accurate timing should be mastered first in order to gain control over participatory discrepancies. Relying on empirical material from teaching, it is this control that makes a band sound good when playing out of time with each other instead of sounding chaotic and amateurish (Wahlström, 2008).

Obviously, recording traditions have changed drastically over time, for example between 1969 when Led Zeppelin's debut album *Led Zeppelin I* was released and the present day. This has naturally affected groove, also. Among the main factors is at least the use of a click track in the studio and especially the extended possibilities of editing provided by digital technology. The original absence of a click track allowed the musicians to slightly speed up or slow down the tempo if it felt natural. Some of this alteration may have been done unintentionally, but it has certainly created variation within the structure of a musical piece. The differences between the time feels and grooves of different parts of a song may be natural effects of slight tempo changes. The aforementioned participatory discrepancies were as much present on recordings as in live playing, as opposed to today's opportunity of editing and therefore altering a band's natural groove. It can thus be speculated how much these technological circumstances are responsible for the liveliness which can be found in the slightly swinging phrasing of AC/DC and Led Zeppelin or the interplay of Black Sabbath, as opposed to the rigidity and even phrasing of Children Of Bodom, for example. The effect which recording techniques have on groove would in itself be a subject for a study and therefore it is here limited to this discussion.

Conclusion

Ultimately, groove is an important element of hard rock and heavy metal. This is evident since different pieces of music are clearly performed with different time feels and phrasings.

Most importantly, this study shows that groove can be studied, taught and mastered systematically, as opposed to being something that happens randomly. Especially the exercise of using varying amounts of swing phrasing demonstrates this. The increased awareness and control of timing and phrasing makes it easier for a student to acquire and distinguish the rhythmic

nuances characteristic to hard rock and heavy metal. Spectral analysis of the analyzed recordings could be carried out in future studies.

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