Chapter 6:

Analysis of rhythm in electronic dance music

In this chapter I try to identify and describe some essential rhythmic elements in electronic dance music and consider them in relation to their possible effects on movement. The poumtchak pattern that I have chosen as a focal point for this study is not present in all tracks or genres of electronic dance music, but if one pattern had to be chosen as a unifying rhythmic pattern (at least for the large subgenre of house music), it would be this one. Thus my analyses of rhythm here will primarily focus on tracks where the poumtchak pattern is present. Aspects of sound are also important to the ways in which body movements are activated by this music, and I will deal with that issue separately.

I start with elements that are part of (or closely related to) the poumtchak pattern itself and then move on to elements that are more distant from it before finally considering the totality of a given groove. Most of these elements presented are central to the music culture in question, but I have also chosen certain musical examples for what they might show us rather than their value as an archetype of the style or their recognisability within the culture. I will emphasise British and French house music from the second half of the 1990s but present examples from elsewhere as well.

Introduction

I will begin by describing and explain the methodological tools that I will apply to the musical material.

THE PRESENTATION OF THE ANALYTICAL WORK

The analyses will primarily follow this format:

1. Choice of material. I have chosen excerpts from tracks that illuminate the specific element or elements in question. I will introduce them with year of release and tempo (in beats per minute = bpm) and explain why the chosen excerpt is a suitable example of the element or elements in question. I will also describe the excerpt as necessary.

2. Visual representations. I have used a computer-based sound analysis program and examined various parameter settings for the analyses regarding both closer investigation of the elements in question and an understandable sonogram presentation.[59] I draw upon transcribed notational representations and amplitude representations as well.[60]

3. Determining salient sounds. I will use the term "salient sounds" to refer to the sounds in the music that are especially significant for capturing attention. According to Jones's theory of dynamic attending presented in chapter 4, so-called critical points in the music determine how we attend to it. The sounds of the poumtchak pattern work as such critical points in electronic dance music. When the music starts, the alternating bass drum and hi-hat establish expectations for later onsets of the same sounds at specific points in time (critical points). Jones uses the concept of entrainment to explain how a "driving rhythm" in the music initiates oscillations in our attentiveness towards these critical points.[61] It is likely that oscillations connected directly to muscle activations also occur. However, all of this turns on the individual sound's ability to capture our attention. An upbeat hi-hat pattern will constitute a critical point if it is sufficiently "present" in the overall mix. But if its volume is too low, or another instrument in the same frequency area masks it, this hi-hat pattern may not perform a significant role in the perceptual process. According to Gibson's theories, presented in chapter 4, attention processes are also guided by "afforded actions." Sounds that are connected to a movement pattern therefore capture our attention more effectively than sounds that are not. However, sounds can be important in different ways and to different degrees, contributing through subtle variations, for example. I will discuss degrees of "salience" to address these distinctions, and I will also demonstrate how changes in sounds or the mix can influence it. My analytical approach here has been to combine various listening strategies (especially concerning attentional focus) with an active engagement with movement and the contributions of various sounds to it.

4. Suggested movement curves. Based on the salient sounds, I plot movement curves upon the sonograms to illustrate my interpretations of possible body movement patterns. These are only two-dimensional vertical renderings of the potential for movement in the

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[59] See my introduction to the use of sonograms on page 10.
[60] Most examples will be presented without barlines or a specific time signature, because the rhythmic patterns in the excerpts often imply various meters. Tracks that clearly communicate a 4/4 meter will in some cases be presented with this time signature as well as barlines.
[61] Jones 2004:50.

musical excerpt in relation to the topics that are being discussed. The movement curves are intended to illustrate a simple vertical movement pattern and various potential modifications that can be realized in many different ways. They do not illustrate actual movements or measurable durations of those movements. While illustrating the connection between sounds in the music and possible movements, the lengths of my movement curves may vary due to the visual renderings of the sounds in either the sonograms or the notational representations. However, differences in lengths are also used in certain illustrations to portray changes in force or emphasis.[62] I also use variations in the width of the curves to indicate potential longer durations at certain points,[63] and these may also be experienced as changes in force or emphasis. Finally, I will indicate potential tension and friction in our experience of the groove through breaks or interruptions in the movement curves.[64]

The aim of these analyses is not to try to identify the "correct" movement for a specific groove but to indicate how various musical elements influence the movement impulse within the music. A few terms will be central to how the music may be experienced by someone who is moving to it:

Drive: *The experience of being continuously pushed forward within the movement pattern.* The "drive" recalls Jones's entrainment model where an external ("driving") rhythm in the music impacts an internal ("driven") bodily rhythm (in our distribution of attentional energy or the activation of muscle commands). The salient sounds in a basic beat (the bass drum and hi-hat sounds of the poumtchak pattern, for example) facilitate up-and-down movements and even push the body forward through these movements. Other sounds contribute to this as well.

Emphasis: *The experience of extra weight or energy in relation to certain movements upward or downward.* When the salience of a set of specific points in a rhythmic pattern is increased, for example, through accentuation, an added sound, or an anacrusis/pick up, it is assumed that these points will cause greater intensity in their corresponding movement. This assumption draws upon the theories of Lakoff and Johnson presented in

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[62] See, for example, figure 6.9. Changes in force or emphasis may also result in actual variations of lengths in relation to the other movements of a pattern, but these aspects of the realization of movement curves will not be discussed in any detail.
[63] See, for example, figure 6.13.
[64] See, for example, figure 6.43.

chapter 4 that link previous sensorimotor experiences (up/down and, similarly, more/less) to the triggering of motor activity. Extra emphasis is also closely connected to an experience of drive.

Tension: *The experience of a disturbance to the basic movement pattern.* The "driving" rhythm of a less salient but also *conflicting* pattern can influence the movement pattern driven by the poumtchak pattern. The impulses conveyed by the conflicting pattern then bring a constructive tension to our experience of the groove.

Expectation: *The experience of being prepared for or anticipating a specific occurrence.* In traditional music analysis certain chord progressions create expectations for an upcoming event. Similarly, in electronic dance music, build-ups or various rhythmic events create expectations for an upcoming event or a particular development. These expectations presumably influence our movements, causing more intensity or emphasis to be brought to certain parts of the track overall or certain points in its rhythmic structure.

EXAMPLE OF THE PROCEDURE IN RELATION TO ONE SPECIFIC TRACK

1. Choice of material. The track *Phœnix* (1996; tempo 127 bpm) by Daft Punk has a section from 0:15 to 0:30 that consists of the poumtchak pattern only, which makes the essential features of this element perfectly clear.
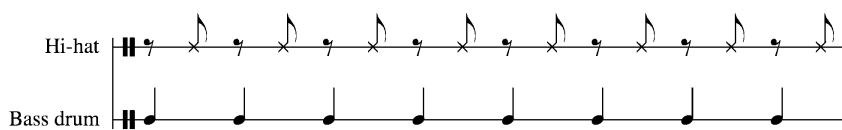
2. Visual representations.

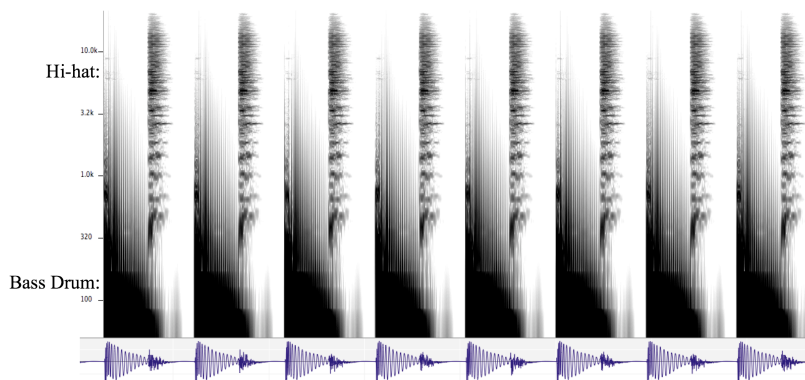Figure 6.1: Notational representation of Daft Punk's *Phœnix,* 0:15–0:19.

Figure 6.2: Sonogram (with amplitude representation) of Daft Punk's *Phœnix,* 0:15–0:19.

3. Salient sounds. Neither the bass drum sound in the lower part of the sonogram nor the hi-hat sound in the upper part is disturbed by any other sounds. This is the Daft Punk track from the survey presented in chapter 3, and it was especially effective in activating a vertical movement pattern that corresponded with the poumtchak pattern in the music. Thus these sounds appear to capture a listener's attention in an unambiguous way. The bass drum carries more literal energy, as is evident from the amplitude presentation beneath the sonogram, and it therefore captures our attention first. However, the hi-hat is alone in its high-frequency area and has its own specific role in the formation of the movement pattern, so it provides significant attention points as well.
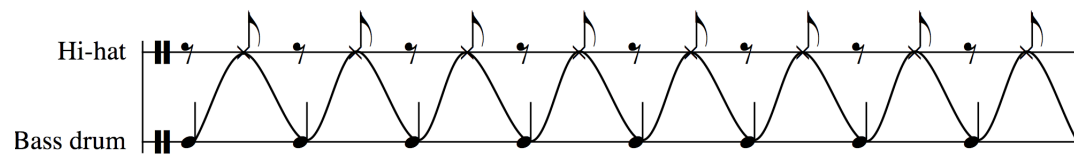
4. Suggested movement curves.

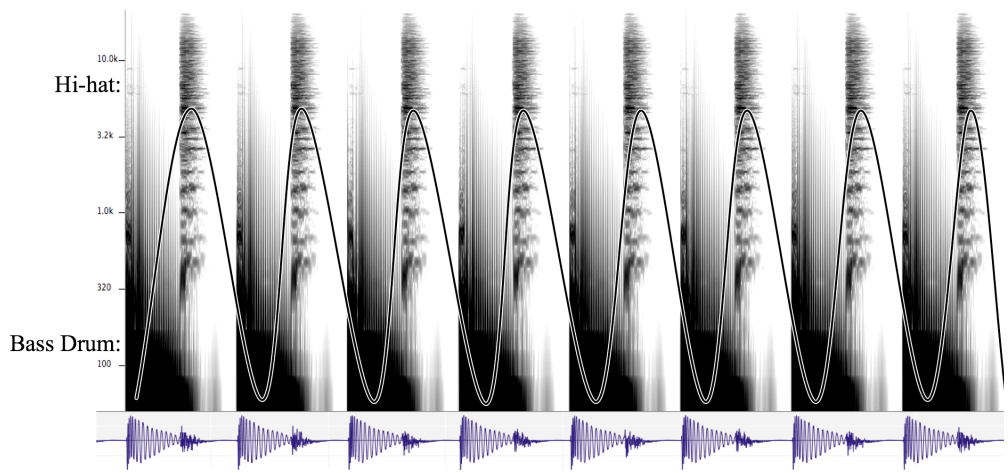Figure 6.3: Notational representation with suggested movement curve for Daft Punk's *Phœnix*, 0:15–0:19.

Figure 6.4: Sonogram with suggested movement curve for Daft Punk's *Phœnix*, 0:15–0:19.

As discussed in chapter 4, a culturally validated notion of musical verticality appears to link the alternation of sounds with high- and low-frequency content with certain kinds of body movements. These sounds naturally pull in opposite directions and thus cause the movement pattern proposed in the above figures. The poumtchak pattern forms the basic beat of this excerpt, and it is also the basic "driver" of the movement pattern. The movement curve displays no variations because this excerpt consists solely of an undisturbed poumtchak pattern.

In addition to the examples that will be treated in this way, I will introduce others as well to provide a more thorough discussion of the musical elements in question with comparisons to other relevant genres.

Elements of the basic beat

THE BACKBEAT

A British DJ who responded to my initial listener survey described the music he listened to as poum-tchak-*clack*-tchak, with the "clack" being the snare drum on beats two and four.[65] Countless house music tracks use a snare drum or similar sound on every second downbeat usually in tandem with a bass drum sound. This omnipresent bass drum sound seems to modify the typical backbeat emphasis of a rock song, producing a more insistent drive forward. The sound of the snare drum in a house track is usually lower in frequency range (less bright) than a rock snare drum, and sometimes it blends in altogether with the accompanying bass drum sound. Tracks without a bass drum on every second downbeat may still present a poumtchak pattern, but only if the different sound is not *too* different (some tracks have sounds that are difficult to categorize as either bass drum or snare drum). How specific qualities of a given sound influence a movement curve will be discussed further in chapter 8.[66]

The backbeat in earlier genres

Disco tracks from the 1970s with the poumtchak pattern consistently have snare drum sounds or handclaps on every second downbeat, and this backbeat accentuation is more prominent there than it is in later electronic dance music tracks. Several tracks combine the upbeat hi-hat pattern with a more standard rock beat – that is, without a "four-to-the-floor" bass drum pattern. In the production of Chicago house tracks, handclap sounds frequently substitute for the snare drum sound, and tracks without any backbeat accentuation at all came and went as well.[67]

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[65] Facebook message received from Frank Cooper on 29.05.2007.
[66] See page 223.
[67] For example, Phuture, *Acid Tracks*, 1987.

<u>Main examples: Hercules and Love Affair, *Blind (Frankie Knuckles Remix)*, and</u>
<u>Basement Jaxx, *Fly Life*</u>

a. *Blind (Frankie Knuckles Remix)* (2008; tempo 124 bpm) is a track by the New York DJ/producer Andy Butler's project Hercules and Love Affair that is remixed by the legendary DJ Frankie Knuckles. Antony Hegarty (of Antony and the Johnsons) contributes with vocals on the track. It starts out with a basic beat by itself that consists of the poumtchak pattern with an added snare drum sound on every second downbeat. A congas pattern enters after seventeen seconds and gradually more elements are added to the track.

b. The Basement Jaxx track *Fly Life* (1996; tempo 127 bpm) starts out with almost thirty seconds of a basic beat and a discreet noise/sound modulated by a moving low-pass filter. The basic beat has a handclap sound on every second downbeat.
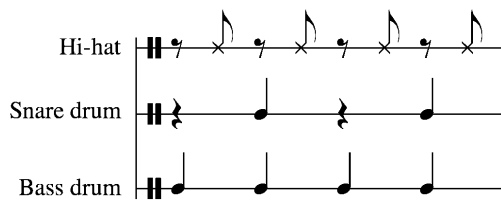

Figure 6.5: Notational representation of Hercules and Love Affair, *Blind (Frankie Knuckles Remix)*, 0:05–0:07.
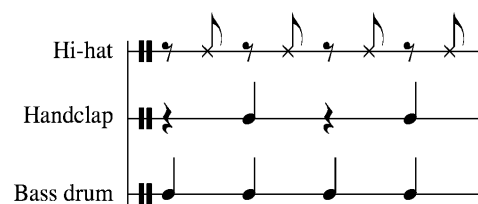

Figure 6.6: Notational representation of Basement Jaxx, *Fly Life*, 0:17–0:19 (modulated noise/sound not included here).
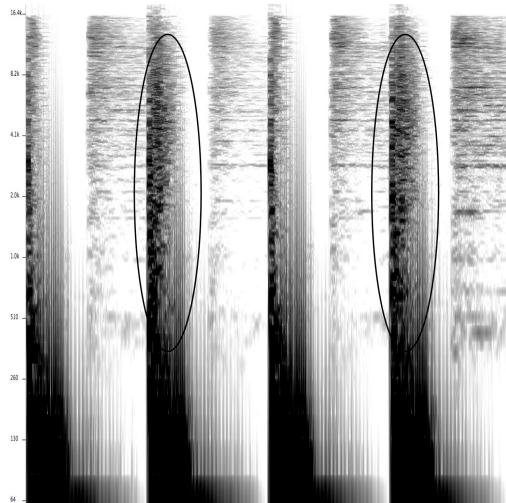

Figure 6.7: Sonogram of Hercules and Love Affair, *Blind (Frankie Knuckles Remix)*, 0:05–0:07. Snare drums circled.
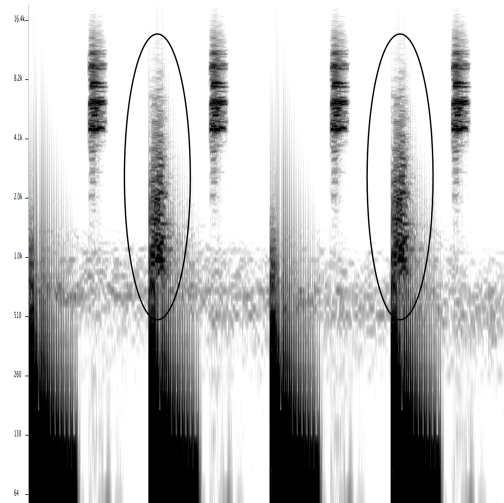

Figure 6.8: Sonogram of Basement Jaxx: *Fly Life*, 0:17–0:19. Handclaps circled.

While the snare drum sounds in the Hercules and Love Affair track (figure 6.7) blend in with the bass drum sounds, the handclaps from the Basement Jaxx track (figure 6.8) are

more discrete. As salient sounds, however, they simply capitalize upon the bass drum sounds rather than act alone in any way.
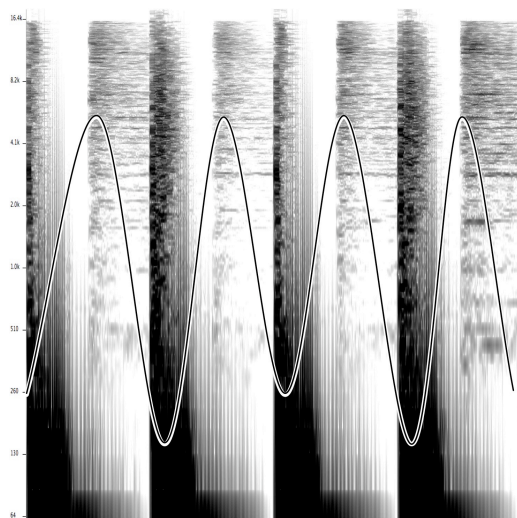

Figure 6.9: Sonogram with suggested movement curve for Hercules and Love Affair, *Blind (Frankie Knuckles Remix)*, 0:05–0:07.
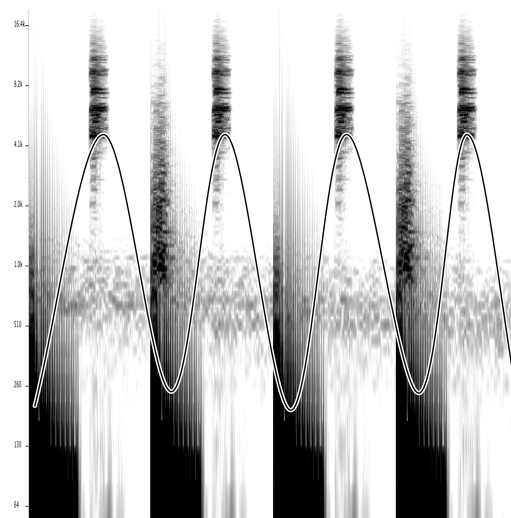
Figure 6.10: Sonogram with suggested movement curve for Basement Jaxx, *Fly Life*, 0:17–0:19.

My interpretation of the effect of these sounds reflects their perceived pull downward on every second downbeat. The snare drum sound on the Frankie Knuckles remix seems to add emphasis to this downbeat (represented by a deeper curve), whereas the handclaps on the Basement Jaxx track are more neutral or even slightly counteract the pull downward of the bass drum. In accordance with my discussions of verticality in music in chapter 4,[68] this bright-sounding handclap may in fact conflict with the much lower bass drum sound and therefore slightly reduce the "weight" of those downbeats. However, the distinctions here are subtle since an added sound most likely will cause extra emphasis to the specific point in the rhythmic pattern.

Snare drum sounds or various other sounds emphasizing or altering every second downbeat are common resources towards producing constant variation of the basic beat (poumtchak pattern). However, the sonic balance of these sounds with the ongoing bass drum is very important. If the contrast is too great, the drive can be affected or even impaired; if it is too slight, the variation will have no real effect.

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[68] See page 134.

ANACRUSES (PICK-UPS) AND THE PRODUCTION OF DRIVE

Matthew W. Butterfield discusses the role of the anacruses in a groove's drive.[69] Employing Hasty's analytical methods, he attempts to explain why various events are classified as anacruses, writing the following about the swing rhythms of jazz:

> The flow of swing eighth notes generates offbeat anacrusis, directing attention toward the ensuing quarter-note beats. A powerful anacrusis emerges on beats two and four as a result of the drummer's ride rhythm pattern, and this is often reinforced by the tendency of bass players to accent the backbeats and place chordal dissonance there. Consequently, the resulting projections are charged with energy because one is always expecting new beginnings—attention is always directed toward the next event via anacrusis, not the completion of the present event through continuation.[70]

While I agree with Butterfield's assumptions about the "vital drive" of swing, I am not sure he adequately explains how "the resulting projections are charged with energy." Expectations of new beginnings can be aroused through the repetition of many different patterns and combinations, on the one hand, and similar rhythmic patterns can also lead to a markedly conclusive downbeat (depending on the preceding event and the duration of the sound on the downbeat). The energy produced by anacruses might become clearer if we introduce body movements into the discussion. How do anacruses influence a vertical movement pattern like head nodding or foot tapping? By directing our attention always to the next event, they might support the drive of the ongoing movement downward, which at the same time propels the overall movement pattern as well.[71] When the movement downward is given extra emphasis, the following movement upward has to be slightly accelerated to synchronize with the music, which pushes the pattern forward. In relation to the poumtchak pattern, various alternative or ornamental sounds can appear immediately before a downbeat to provide extra emphasis to it in a manner reminiscent of swing.

Main example: Shazz, *Fallin' In Love (PT. G Remix)*

The track *Fallin' In Love* (2001; tempo 127 bpm) by the French producer Shazz (Didier Delesalle), remixed by Paris DJ/producer DJ Gregory (Grégory Darsa), starts out with

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[69] The term "anacrusis" is usually employed to label notes preceding the first downbeat in a measure. However, Butterfield uses the term in accordance with Hasty's analytical method where he classifies events as "beginnings," "continuations," or "anacruses." Thus the function of preceding or leading up to the coming event is vital, while the connection to the first beat of the measure is not. The term "pick-ups" is used similarly and I will use this term here succeeding the discussion of Butterfield's work.

[70] Butterfield 2006:[23] (reference to paragraph in online article).

[71] See also Danielsen's description of the B-section groove of Parliament's *Up for the Downstroke* for an assessment of the effect of a similar rhythmic event (Danielsen 2006:119).

fifteen seconds of a basic beat. Part of this beat is a short sound that occurs right before the second, sixth, tenth, fourteenth (and so forth) downbeats.
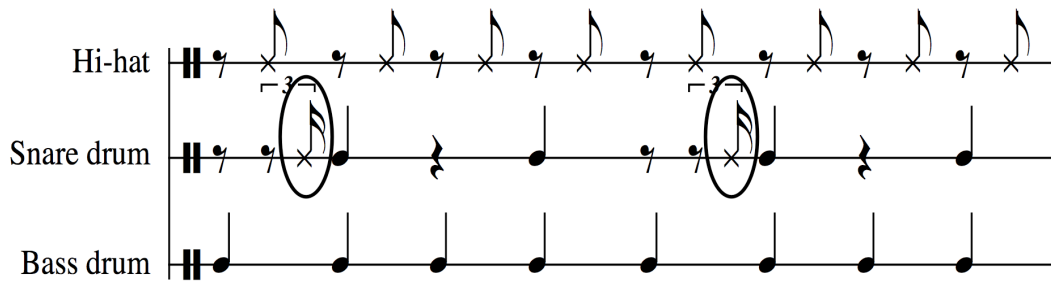

Figure 6.11: Notational representation of Shazz, *Fallin' In Love (PT. G Remix)*, 0:04–0:07, events in question circled.
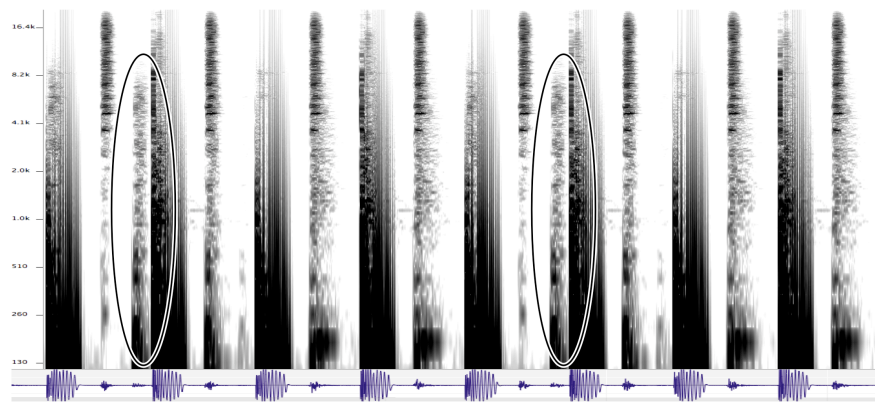

Figure 6.12: Sonogram of Shazz, *Fallin' In Love (PT. G Remix)*, 0:04–0:07, events in question circled.

The short sounds are in fact snare drum sounds without much brightness or loudness. While this beat cycle obviously differs from the ones before and after, it remains hard to discern the short sound from the succeeding sound, so it functions more as an anticipation of the beat than an independent salient sound. This in turn affects the movement curve.
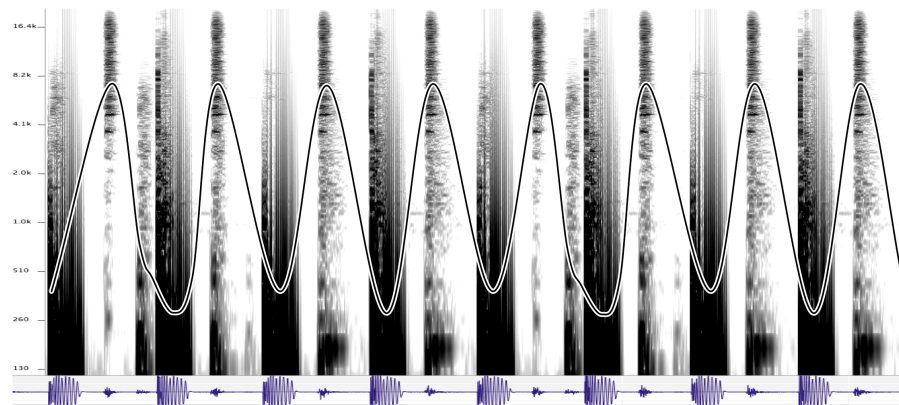

Figure 6.13: Sonogram with suggested movement curve for Shazz, *Fallin' In Love (PT. G Remix)*, 0:04–0:07.

Towards the second and sixth downbeat, the curve contains small breaks where the short sounds occur. These breaks reflect the extra "push" in the body movement.[72] The short sounds might increase our expectations about the coming event, so a wider and deeper curve continues into the downbeat area to indicate this extra emphasis. The steeper curves of the succeeding upbeats reset the movement on the beat again. This groove therefore has a more varied shape than the previous ones while still reflecting the definite characteristics of a poumtchak pattern.[73]

Supplementary examples: pick-ups before the downbeat

Cyclic periods in tracks can be proposed and ordered through similar additional sound events – for example, right before every first, fifth, or ninth downbeat. In a quantized sequencer track, they may occur on the eighth, sixteenth, or even triplet-sixteenth note before the new downbeat. The most common sound for this purpose is probably a bass drum that is somewhat less accentuated but o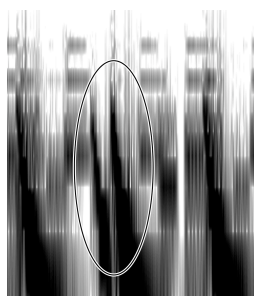therwise the same as the one on the downbeat. The 1993 track *Dark & Long* by the British group/production team Underworld (Karl Hyde and Rick Smith) (tempo 135 bpm) anticipates the first downbeat in every series of sixteen with a short bass drum sound on the sixteenth note just before the downbeat. This event excites expectation and therefore supplies the movement pattern with an extra emphasis on the following (downbeat) movement. Because it is the first in a cycle of sixteen downbeats, this event indicates the relevance of this particular cycle to the track.

Figure 6.14: Sonogram of Underworld's *Dark & Long*, 0:35–0:36, with two bass drum sounds circled.

A bass drum pattern found on the 1998 track *Resurrection* (tempo 135 bpm) by the American producer Medway (Jesse Skeens) has a few more bass drum sounds that contribute in a similar way throughout a cycle of sixteen downbeats.

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[72] The Norwegian DJ Gaute Drevdal emphasizes the significance of the "push and pull" – that is, how a DJ/producer uses different music or different musical features to push the audience on the dancefloor or pull back to produce relaxation and turn attention towards other aspects of the music. Drevdal compares this strategy to traditional rhetorical techniques for leading or controlling crowds (e-mail received 10 October 2006).

[73] On the sonogram it is also possible to see that the hi-hat sounds on the third, fourth, seventh, and eighth upbeats are different from others in the excerpt. The snare drum sound used before the second downbeat is mixed with those hi-hat sounds, varying the basic beat still further in a way not especially relevant to my analysis here.

Bass drum

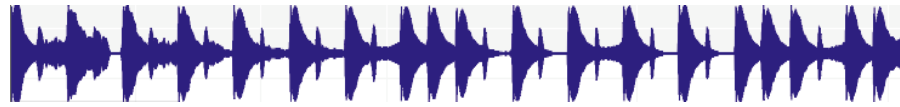Figure 6.15: Notational representation of bass drum sounds on Medway's *Resurrection*, 0:00–0:07.

Figure 6.16: Amplitude representation of Medway's *Resurrection*, 0:00–0:07.

Because they are placed on eighth notes, however, these events are probably experienced more as independent salient sounds than as simple gestures of anticipation. Still, the variations in the movement pattern they cause could similarly raise expectations. The extra events around the first and ninth downbeats imply a cycle of eight beats as especially relevant to this track, though the *double* occurrence of pick-ups at the end of the excerpt seems to create an even stronger emphasis on the first downbeat, indicating a cycle of sixteen beats.

Supplementary examples: pick-ups before the upbeat

Occasionally extra sounds emphasize the upbeat instead. In *Hypnofunk* (2002; tempo 125 bpm) by the Italian production team Boogie Drama (Diego Montinaro and Lele Sacchi) there is an additional hi-hat sound before the upbeat.
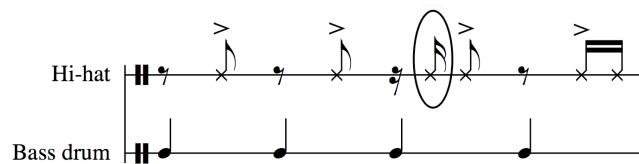
Hi-hat

Bass drum

Figure 6.17: Notational representation of Boogie Drama's *Hypnofunk*, 0:30–0:32 (only drum sounds), event in question circled.
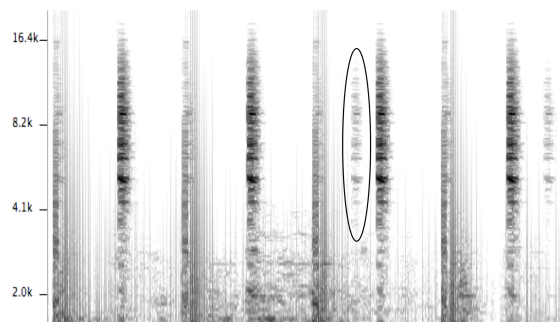

Figure 6.18: Excerpt from sonogram of Boogie Drama's *Hypnofunk*, 0:30–0:32, events in question circled.

170

Unlike the main example in this section (Shazz), we do hear this event as a separate sound, but it still directs our attention immediately to the succeeding sound on the upbeat. The extra emphasis on this specific upbeat also drives the movement pattern, as discussed previously, though more gently than the same effect related to a downbeat. This particular pick-up is actually part of a more elaborate pattern – a less accented hi-hat also follows the succeeding upbeat (to the far right in the sonogram, not circled). Many tracks with a poumtchak pattern have hi-hat patterns with staggered events; those exactly on the upbeats are usually more accentuated.

Daft Punk's 1996 track *Revolution 909* (tempo 126 bpm) has a hi-hat track with a shuffle feel at the beginning and end of a period of four beat-cycles (one 4/4 measure).[74] The events before the first and fourth open hi-hat sounds recall the pick-ups (anacruses) discussed by Butterfield in their effect upon the following upbeat.[75]
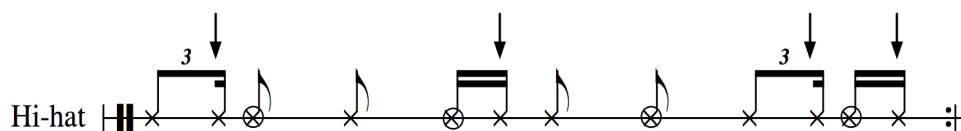

Figure 6.19: Notational representation of hi-hat pattern from Daft Punk's *Revolution 909*, 0:57–0:59; circled notes indicate open hi-hat sounds, while arrows indicate the events in question.
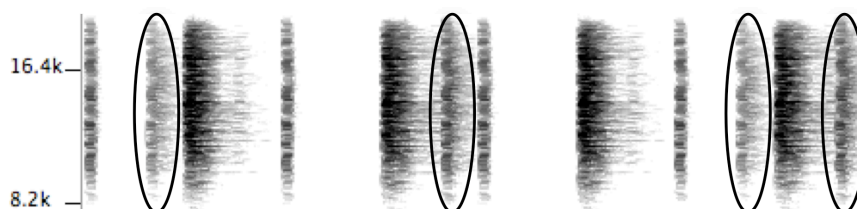

Figure 6.20: Excerpt from sonogram of Daft Punk's *Revolution 909*, 0:57–0:59, events in question circled.

In the above excerpt, most of the frequencies below 5 kHz are filtered out (except for sounds intended to represent a police raid on an illegal rave party) while the hi-hat sounds are boosted, making the pick-ups here much more prominent than elsewhere in the track.[76] The first and third arrows point to events placed a triplet sixteenth before the upbeat, while the second and fourth arrows point to events on the straight sixteenth before the downbeat. These events probably help to vary the movement pattern, but like the Medway example, their most marked effect seems to be on the downbeat following

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[74] The title probably couples the Beatles song title *Revolution 9* (1968) with the Roland TR-909 drum machine.
[75] See page 167.
[76] The sounds on the downbeats in the excerpt resemble short dry hi-hat sounds but may also be the remainder of the bass drum sounds when all of their low frequencies have been attenuated by the filter.

the two events at the end of the excerpt (the first downbeat of the next cycle). The first of these two events contributes energy to the movement upward, while the second gives its energy directly to the succeeding downbeat.

<u>Examples from earlier genres</u>

In disco tracks from the 1970s, similar pick-up effects were produced by events played on bass guitars, electric guitars, keyboards, or congas as part of a melodic line or larger rhythmic pattern.[77] In Chicago house tracks, on the other hand, pick-ups using drum sounds began to occur more frequently. *Tears* by Frankie Knuckles (featuring Satoshi Tomiie) from 1989 uses an extra bass drum sound on the sixteenth before every eighth downbeat, like the Underworld example presented earlier.[78] The programming of drum machines probably introduced possibilities for experimenting with patterns in ways that diverged from the playing of acoustic drums. Short sounds without reverb also permitted more sound events in the patterns without making a hodgepodge of the overall mix. Those strategies deemed most successful on the dancefloor then carried over into the productions of the 1990s.

Pick-ups (anacruses) seem to both excite expectation and provide emphasis to the succeeding sound event, thus encouraging the corresponding movement to be more powerful or energetic. In relation to different beats in a cycle, they create variations in movement patterns while reinforcing established periods or cycles of certain lengths.

Other elements in the production of drive

FASTER PULSE LAYERS

In addition to pick-ups, various other elements of the groove work in different ways to generate energy and inspire movement. Prominent to the build-up sections of tracks is an isochronous pulse on a faster subdivision of the poumtchak pattern (events on the sixteenths). The accentuations are mostly on the downbeats but usually not very distinct. Various instruments can be used, but percussive sounds are the most common – for example, a tambourine or variant hi-hat or shaker sound that is always less apparent than the upbeat sound itself. In the same way that the poumtchak pattern activates a

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[77] An exception is the 1976 Motown track *Down to Love Town* by the Originals, where the drummer occasionally makes extra snare drum entries on the sixteenth preceding the third downbeat, but the effect is fairly subtle.
[78] See page 169.

corresponding movement pattern, a rhythm pattern on a faster subdivision can constitute a "driving rhythm" for an internal body rhythm. However, its capacity to influence a more dominant movement pattern or activate an independent pattern depends upon its salience.

Main example: Rinôçérôse, *Dead Flower*

The 2002 track *Dead Flower* (tempo 125 bpm) by the French production team Rinôçérôse (Jean-Philippe Freu and Patrice "Patou" Carrié) has a tambourine pattern with accentuations on the downbeats and entries on every sixteenth. It is introduced after sixteen beat-cycles with an electric guitar riff and joined by a poumtchak pattern at 0:17 (again after sixteen beat-cycles). The tambourine pattern then continues throughout the track as part of the groove.
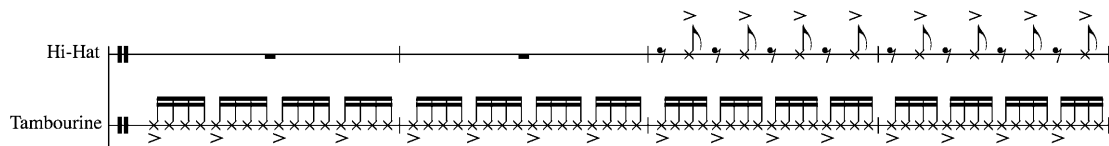

Figure 6.21: Notational representation of tambourine and hi-hat pattern from Rinôçérôse's *Dead Flower*, 0:12–0:20.
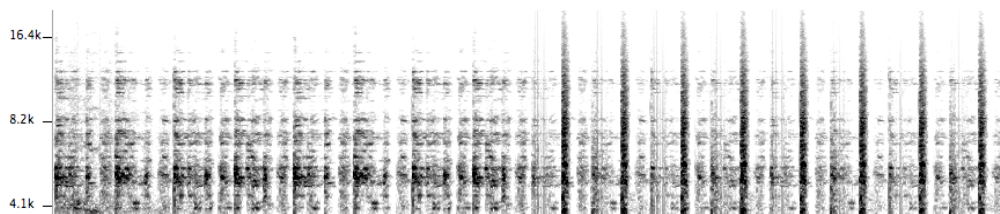

Figure 6.22: Excerpt from sonogram of Rinôçérôse's *Dead Flower*, 0:12–0:20.

Considered alongside the poumtchak pattern, the tambourine sounds seem recessive. The accentuated first sound of the series of four falls on the downbeat, emphasizing an already stressed entry. While they are not salient sounds as such, then, they still seem to increase the intensity of the track. There are two reasons for this: (1) The sixteenths between the sound events inherent to the poumtchak pattern act like the events discussed in the previous section so the preceding tambourine sounds contribute more weight to the bass drum and hi-hat sounds. Since every poumtchak event is preceded by an almost identical tambourine sound, this pattern is not a source of variation for the movement pattern but instead a source of a more intense push, both upward and downward. (2) Despite a relative lack of salience, the tambourine pattern may still generate an

173

independent rhythm as a continuous realization of the sublevel of the poumtchak pattern. Its effect might be realized through various alternative body movements that join or alternate with the vertical movement pattern that follows the poumtchak pattern. The choice of instrument and placement of pattern in the overall mix probably determine which of the effects discussed above is the more dominant.

Supplementary examples: synthesizer sounds

In many tracks, producers place synthesizer patterns with similar sublevel effects in the very front of the mix. These patterns produce alternative rhythms like the tambourine mentioned previously, but with more vigour. In trance music this is very typical, but it also appears in many house tracks. The Chemical Brothers track *Out of Control* (1999; tempo 132 bpm) has a short rhythmic/melodic theme with a constantly modified synthesizer sound that starts at 0:13 and lasts almost the whole track (to 7:19, save for a section from 4:21 to 5:11).

Figure 6.23: Notational representation of rhythmic/melodic theme from the Chemical Brothers, *Out of Control*, 0:13–0:15.

The vertical musical movement of the theme recalls the structure of the poumtchak pattern. Since it does not correspond with the directions of the poumtchak pattern, its verticality probably strengthens the effect of an alternative movement pattern at the level of sixteenth notes.

Melodic structures may also emphasize the level of the poumtchak pattern in various ways. Madonna's *Give It 2 Me* (2008; tempo 127 bpm) has a rhythmic/ melodic theme that is quite apparent in the overall mix of the chorus and gradually builds its intensity.

Figure 6.24: Notational representation of rhythmic/melodic theme from Madonna's *Give It 2 Me*, 1:01–1:16.

174

Because the melodic vertical movements here correspond to the "low" and "high" of the poumtchak pattern, they would add momentum to its already established movement pattern. The change from eighth notes to sixteenth notes increases intensity while preserving the correspondences.

Arpeggiated synthesizer patterns produce similar effects but are often even more neutral as to their influence on movement patterns.[79] *Waiting for Verdeaux* (2000; tempo 133 bpm) by the American producer Mocean Worker (Adam Dorn) uses an arpeggiated synthesizer pattern throughout the track with mostly identical events on every sixteenth note (four events for each bass drum sound, as can be seen in the upper part of the sonogram).
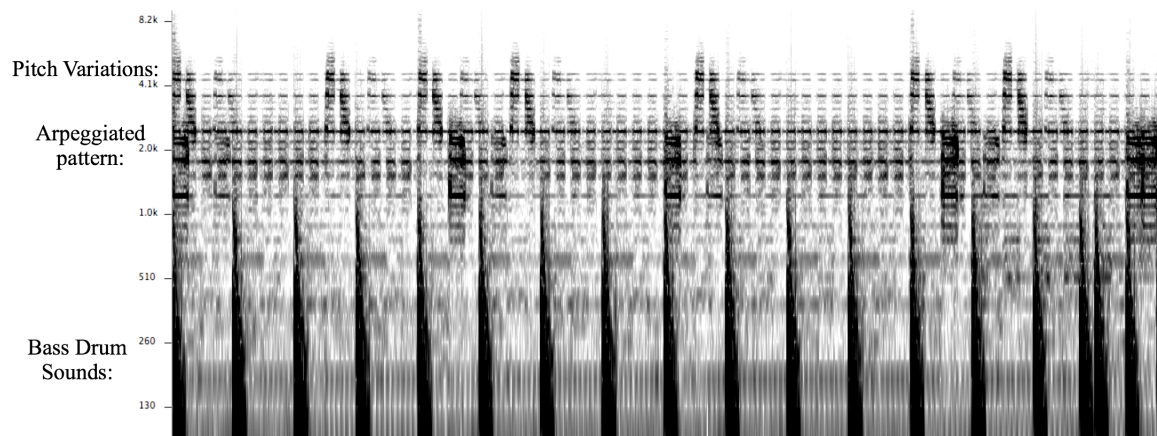

Figure 6.25: Sonogram of Mocean Worker's *Waiting for Verdeaux*, 0:15–0:21 (sixteen beat-cycles).

The bass drum sounds (seen in the lower part of the sonogram) are placed on every downbeat, forming sixteen beat-cycles (four 4/4 measures) with two extra sounds anticipating a new period.[80] The arpeggiated pattern has some vague, rather random pitch variations (seen as double lines in the upper part of the sonogram) as well as an accentuated entry on the fifth and fourteenth upbeats and the first and ninth downbeats. When the upbeat hi-hat pattern is introduced (at 0:58), the poumtchak pattern dominates in relation to body movement, but the arpeggiated pattern seems to supply a certain liveliness or vigour through its irregular accentuations and pitch variations.

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[79] An arpeggiator is a function found on synthesizers (and similar equipment) that generates series of tones through the use of one or several keys on the keyboard. These series may be structured according to various patterns of pitches, rhythms, and accents, and they can be made to fit a certain tempo.

[80] Similar to the Medway example discussed on page 169.

<u>Supplementary examples: vocal sounds</u>

One intriguing way of producing a faster pulse in a track is to use rhythmic vocal phrases, usually without any specific melody. In line with the theories on motor-mimesis presented in chapter 4, these phrases may serve as a source for meaningful bodily movement depending upon how their sounds are produced. The listener/dancer is in this case offered possibilities for vocalization (or "subvocalization")[81] – he/she can sing along, either loudly, quietly, or silently. The body movements activated by this participation may influence a larger vertical movement pattern through enhancements of the poumtchak's movement relations. The rhythmic vocal phrases are often spoken rather than sung, and they are typically introduced on their own and then gradually blended into the complete groove. Thus the listeners/dancers can lock onto the vocal phrases before they fade back into the mix. The 1999 track by Lord of the Drums featuring Michelle Luna, *Slept 2 Gether* (tempo 130 bpm), has a spoken vocal phrase performed by a heavily filtered female voice throughout most of the track.[82]
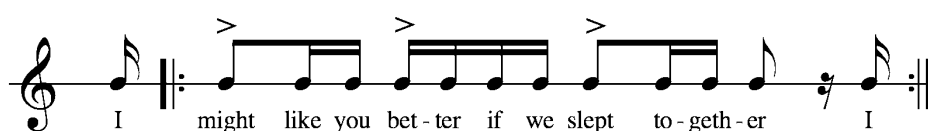

Figure 6.26: Notational representation of rhythmic vocal phrase from Lord of the Drums feat. Michelle Luna, *Slept 2 Gether*.

The accentuations on the words "might," "better," and "slept" correspond with the three first downbeats of the 4/4 period. If the listener/dancer moves down on the downbeats, these words would be spoken at the same time, potentially strengthening a vertical body movement. The energy used to utter the accentuated words could be transmitted to the movement, and vice versa. Similarly, Mocean Worker's track *Air Suspension* (2000; tempo 130 bpm) has a two-sentence vocal phrase performed by a filtered male voice throughout the track.

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[81] Subvocalization is a term introduced by Arnie Cox to describe the silent singing he believes is important to music listening; see Cox 1999:78ff.

[82] The phrase "I might like you better if we slept together" is taken from the American new wave/post-punk group Romeo Void's song *Never Say Never* from 1981.
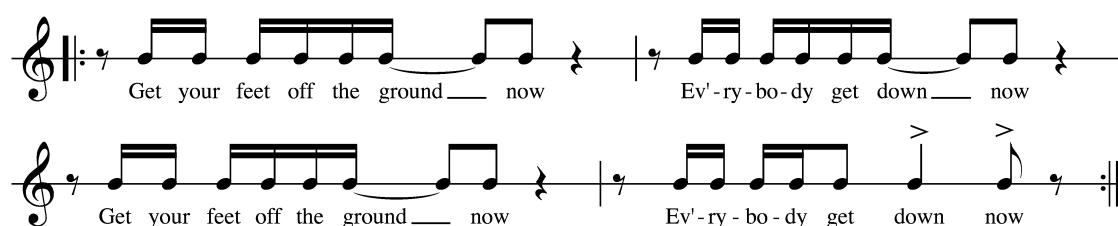
Figure 6.27: Notational representation of rhythmic vocal phrase from Mocean Worker's *Air Suspension*.

The phrase in the fourth measure deviates from the others by accenting the last two words and thereby emphasizing the downbeats, as in the Lord of the Drums example. The other words or syllables do not really accentuate any beats in the poumtchak pattern, but the phrases still seem to fit well with a vertical body movement. The deviating ending also forms a periodic cycle of four measures even though the sentences form identical pairs in terms of their words.[83]

THE DIMINISHED (TIME) INTERVAL

The next element involves sounds that are easily identified in the overall mix and are therefore applied to various build-up effects. They are created by gradually contracting the time intervals between recurrences of a specific sound, after sixteen beat-cycles, then after eight, then after four, and so on. When the time interval is contracted, an expectation of a further contraction most likely arises (at least for "insider" listeners), and our attention will be guided towards these points in the rhythmic structure. When these contracted time intervals intersect with the poumtchak pattern, they will most likely affect its vertical movement pattern.

Main example: Romanthony's *Floorpiece*

The 2000 track *Floorpiece* (tempo 127 bpm) by the American producer Romanthony (Anthony Moore) starts with a poumtchak pattern that features a quite dominant snare drum on every second downbeat. A sound effect also starts on the first downbeat, followed by a short synthesizer theme.

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[83] In electronic dance music, sampled voices or sounds that are easily identified are often altered in this way. Events initially placed on the downbeat, for example, might occur on the preceding upbeat in the next measure, or they are moved an eighth or a sixteenth backward or forward. Such variations influence how movement patterns are shaped in a way similar to Nketia's "spacing" in African music, where patterns or parts are staggered within musical pieces (Nketia 1974:134). Danielsen calls this effect "displacement" and presents examples from James Brown's funk music; see, for example, Danielsen 2006:80.

Figure 6.28: Notational representation of repeated events from Romanthony's *Floorpiece*.

These events are repeated after eight downbeats. After six iterations, the time interval is reduced to four downbeats, and after four iterations the time interval is reduced again to two downbeats. When the time interval of two has lasted thirty-two downbeats, the events are gradually filtered out of the mix. The complete section in question lasts from 0:01 to 0:58.
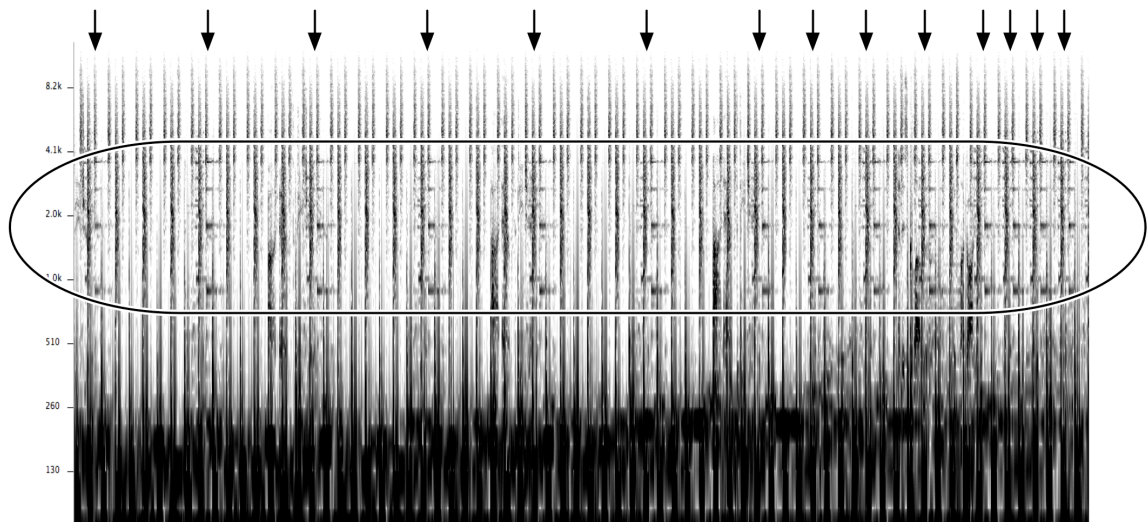

Figure 6.29: Sonogram of Romanthony's *Floorpiece*, 0:01–0:35, with circle and arrows indicating repeated events.

The initial sound effect ("S.Eff" in the notation) is no more than a soft burst of reverb, but it nevertheless differentiates the first downbeat from the others. The synthesizer theme, on the other hand, is very distinct and sounds almost by itself in the frequency area of 1,000 to 4,000 Hz. When the events repeat after a certain time interval, they in turn excite expectation about yet another return. This expectation is violated when the time interval is diminished, especially since this happens after *six* (and not four or eight) downbeats. At this point the sound's salience therefore increases significantly, and we might begin to expect other variations as well. Because the next change happens after a more typical interval of four iterations, the listener/dancer is likely to be better prepared and "accept" the variation promptly.
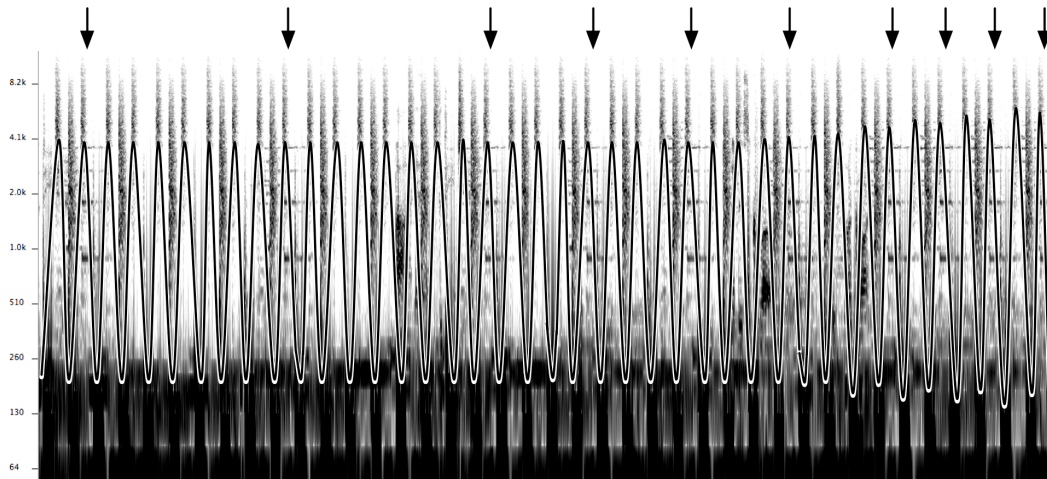
Figure 6.30: Sonogram with suggested movement curve for Romanthony's *Floorpiece*, 0:16–0:35, with arrows indicating repeated events.

These events do not seem to alter movement patterns in the first period, but when the time intervals are diminished and the events reappear more often, an experience of increased intensity will encourage more energetic movements. This is why the length of the movement curve in the sonogram gradually increases, both at the downbeat and at the upbeat, at the end of the section. The downbeats in the last section, where the events in question appear most frequently, will be experienced even more energetically than the others. When the events have continued for a certain period with the same interval, their effect upon dancers' attention and expectations will probably lessen.

Basslines

INFLUENCES FROM EARLIER GENRES

One of the most important links from the disco era to the electronic dance music of the 1990s is undoubtedly the basslines. Chicago house producers often recycled exact basslines from various disco tracks. For example, the bassline of the first Chicago house track to reach number one on the British charts, Steve "Silk" Hurley's *Jack Your Body* (1985), is taken from the last section (from 2:27) of the Warehouse classic *Let No Man Put Asunder (Shep Pettibone Remix)* by First Choice (orig. 1977, Shep Pettibone's remix 1983). Hurley's track has a synthesizer bass and therefore sounds differently, but the rhythmic qualities are preserved:

179

Figure 6.31: Notational representation of bassline from last section of First Choice's *Let No Man Put Asunder (Shep Pettibone remix)*, 3:11–3:19.

Figure 6.32: Notational representation of bassline from Steve "Silk" Hurley's *Jack Your Body*, 0:03–0:11.

This bassline can be divided into two parts: the first two events, on the tonic note, accentuate the first two downbeats in a stable manner, while the remainder is unstable (syncopated) with an ending that clearly returns to the opening notes, generating a continuous drive forward that can be repeated endlessly. The small deviation of every second ending makes the two periods of four beat-cycles into a unit. The use of the unison, perfect fifth, minor seventh, and octave is also typical. In addition to the perfect fourth, these intervals or scale steps fill many basslines in electronic dance music tracks. Later in the 1980s it became less common to copy basslines in such a manner. Due probably to the increasing demand for innovation in dance music, the imitation typical of Chicago house did not carry forward in British house.[84] Nevertheless, 1990s producers continued to exploit many of the *qualities* of the basslines that were dominant in the dance music of the 1970s and early 1980s.

The pick-ups of basslines in funk

The basslines of funk tracks represent another significant inspiration for electronic dance music producers, both directly and via their earlier influence on disco. This is due less to funk's extra emphasis on the first downbeat of a 4/4 measure (the "One") than to its characteristic early anticipations of significant downbeats (the "small notes"). Danielsen observes that such events might be perceived to be stretching the downbeat: "In cases such as the pick-ups to the strong beats and also the rolling basslines of sixteenths typical of Bootsy Collins's playing, one might rather think of what happens as an offbeat-based pulse of sixteenths being triggered around the beat, working as a magnet both before and after it and thereby absorbing some of the energy of the strong beat."[85]

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[84] See page 59.
[85] Danielsen 2006:85.

Example of bassline from funk in electronic dance music

Similar pick-ups appear in the basslines of electronic dance music tracks and likewise contribute to how the downbeats are experienced. The bassline of the Basement Jaxx track *Red Alert* (1999; tempo 127 bpm)[86] is a sample from the track *Far Beyond* by Locksmith (from the 1980 album *Unlock the Funk*).[87]
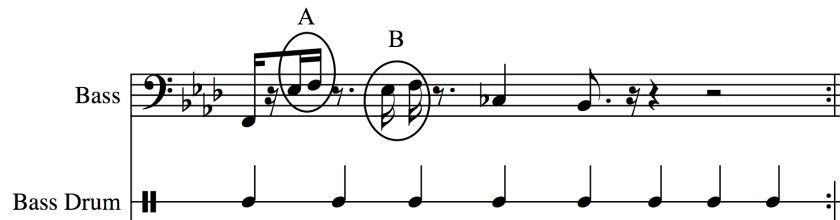

Figure 6.33: Notational representation of bassline (and bass drum) from Basement Jaxx's *Red Alert.*

The two events that end on the higher F note (A and B) are both preceded by pick-ups, but only the second occurrence (B) places the F exactly on a sounding downbeat. The first occurrence (A) is instead experienced as (two) pick-ups to the following downbeat, but the fact that they are identical to the succeeding event may cause them to be heard as an early or extended second downbeat. Thus the first and second incidents (A and B) shape the downbeat in slightly different ways. Another feature that links this track to funk is the slap-hand playing technique that creates the very specific sound of these two incidents.[88] In the two last (downbeat) events in the bassline, the original sound from the sample is blended with a synthesizer sound.

Example of "call and response"

The call-and-response technique is also a musical feature that has its roots in various genres of African and African American music.[89] It is found in electronic dance music tracks in realizations of basslines using various other sounds but also between completely different instruments. The track *Jump n' Shout* (1999; tempo 127 bpm) by Basement Jaxx has a bassline that is succeeded by two attacks of a strange, "bubbly" sound effect that perform (or at least evoke) a call and response:

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[86] The music video for the track in fact has several references to the 1970s funk group Parliament (costumes, science fiction).

[87] The Locksmith track has a tempo of 114 bpm and the bassline is placed two semitones lower. When the Locksmith sample is placed in a conventional sampler and played a major second higher, its tempo becomes exactly 127 bpm.

[88] The technique is primarily associated with Larry Graham, who first was bass player with Sly and the Family Stone.

[89] In his article "Black Music as an Art Form," Olly Wilson lists call-and-response (or antiphonal) structures as one of six tendencies or approaches characteristic of the music of peoples of African descent; see Wilson 1983:3.

Figure 6.34: Notational representation of bassline and sound effect from Basement Jaxx, *Jump n' Shout*, 0:37–0:53.

Since the sounds here are quite different, the call-and-response effect is probably due mostly to the counterrhythmic realization of the instruments.[90] Their presence in the groove is somewhat tangential to the fundamental movement pattern created by the other sounds, and thus a connection is formed between them. In the last notated measure the call and response is muted by an extended bassline figure.

Example of bassline from disco music

The bassline with alternating octaves characteristic of late-1970s disco music corresponds well to the poumtchak pattern. *You Make Me Feel (Mighty Real)* (1978; tempo 131 bpm) has a bassline that is typical of Patrick Cowley's disco productions with Sylvester (Sylvester James).

Figure 6.35: Notational representation of bassline from Sylvester's *You Make Me Feel (Mighty Real)*.

This bassline, present in the intro and the chorus, plays in unison with a synthesizer sound on a higher octave that has an additional entry on the sixteenths. Also present is an upbeat hi-hat pattern and an alternating bass drum and snare drum/handclap on the downbeats. Musical verticality is thus asserted by several events that correspond in up-and-down directions, which probably contributed to the success of this track on the dancefloor. Shapiro describes the basslines of these Sylvester tracks as "galloping,"[91] neatly capturing the link to vertical movement patterns in a single word.

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[90] Counterrhythmic patterns are discussed later; see page 189.
[91] Shapiro 2005:67.

In addition to their rhythmic qualities, basslines obviously have a melodic aspect that can impact body movement. In the previous example, the bassline directly reinforces the poumtchak pattern. This type of reinforcement also occurs in electronic dance music, but generally the correspondence is more subtle.

Main example: Fritz Valley Project's *Blindness (Harmonic Excursion)*

The 1998 track *Blindness (Harmonic Excursion)* (tempo 127 bpm) by the German production team Fritz Valley Project (Frank Impink and Andreas Köhler) uses the same bassline for most of the track. The groove consists also for the most part of a shaker pattern, a handclap sound on every second downbeat, and a congas-type pattern.[92]

Figure 6.36: Notational representation of bassline and bass drum/hi-hat pattern from Fritz Valley Project's *Blindness (Harmonic Excursion)*.

The bassline remains prominent even among the many percussive sounds involved in the track; its E–A intervals in particular seem to constitute salient sounds. It is probably not a coincidence that the ascending movement from E to A corresponds systematically with the poumtchak pattern's movement from bass drum to hi-hat:

Figure 6.37:Notational representation of bassline and bass drum/hi-hat pattern from Fritz Valley Project's *Blindness (Harmonic Excursion)* with movement relations circled.

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[92] These patterns will not be discussed and are thus not notated in this example.

The low E is placed on the sixteenth just before the downbeat bass drum sound, a location typical of many funk tracks.[93] It seems to extend and therefore emphasize every second downbeat. This also affects the drive; the succeeding ascending movement to the upbeat propels the movement upward (to "catch up"), so that every second beat-cycle may be experienced as more energetic. The open hi-hat on the third and seventh upbeat (circled noteheads) also adds emphasis here:

Figure 6.38: Notational representation of bassline and bass drum/hi-hat pattern from Fritz Valley Project's *Blindness (Harmonic Excursion)* with suggested movement curve.

The last part of the bassline is also characteristic in how it leads back to a new beginning. It has several events (on sixteenths) before and after the downbeats and upbeats instead of exactly on the beats, indicating perhaps its origins in funk music.

The fabric of rhythm

An electronic dance music track often starts out with a build-up section that leads to a more complete groove where the basic beat interacts with several other patterns. While some of these patterns or rhythmic elements may be closely connected to and in various ways supportive of the basic beat, other patterns are more independent. The notion of a "fabric of rhythm" attempts to capture this combination of several rhythmic elements or patterns as they interact in various ways with the basic beat and with each other. [94]

COMPLEMENTARY PATTERNS

I will begin with events placed before or after the downbeats and upbeats and mostly within their duple subdivisions. Contrary to the patterns presented earlier, these events do not emphasize certain beats but instead compete with them to some degree, thereby contributing tension to the experience of them.

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[93] See, for example, Danielsen's discussion of the bassline of James Brown's *Get Up (I Feel Like Being a) Sex Machine* (1970); Danielsen 2006:76ff.
[94] Danielsen uses the term "fabric of rhythm" to describe the funk grooves of James Brown and Parliament; see Danielsen 2006:43.

As described in chapter 2, drum machines introduced more and more possibilities for forming patterns that would be difficult or impossible for a live drummer to actullay play.[95] Producers began to experiment with patterns that were quite independent of the basic beat – while bass drum and hi-hat sounds were used to form a poumtchak pattern, shakers, tambourines, congas, and other such sounds could do other things. Such experimenting became even easier with the introduction of computer-based sequencer programs.

Main example: Basement Jaxx's *Jump n' Shout*

The 1999 track *Jump n' Shout* (1999; tempo 127 bpm) starts out with a poumtchak pattern and a third rhythmic layer consisting of a cymbal.
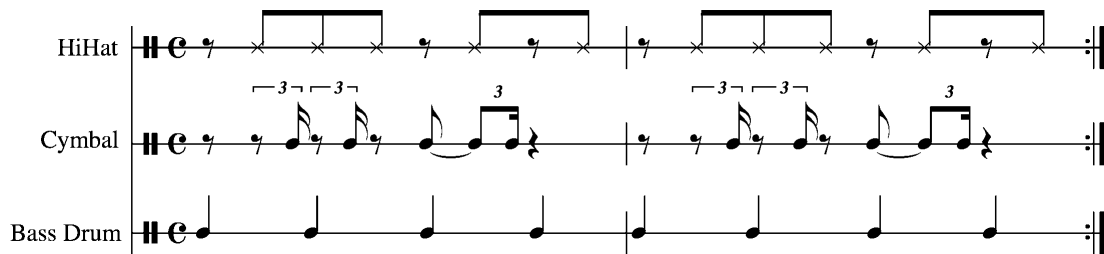
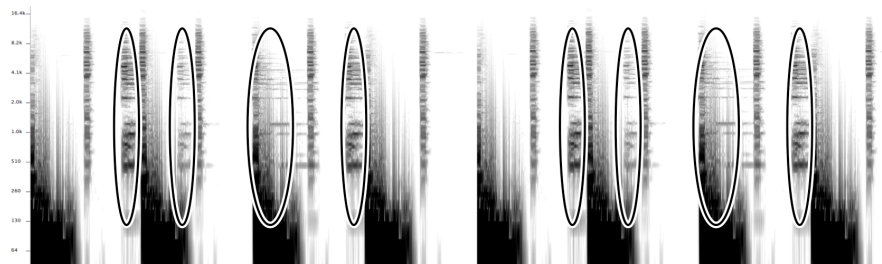Figure 6.39: Notational representation of Basement Jaxx's *Jump n' Shout*, 0:06–0:14.

Figure 6.40: Sonogram of Basement Jaxx's *Jump n' Shout*, 0:06–0:14, cymbal pattern circled.

The cymbal pattern is quite evident here – its attacks are as salient as the hi-hat sounds but not as dominant as the bass drum sounds.

The bass drum and hi-hat sounds form a poumtchak pattern that most likely controls movement. The third (and seventh) event of the cymbal pattern has the same entry point as the bass drum sound and therefore stresses those downbeats:
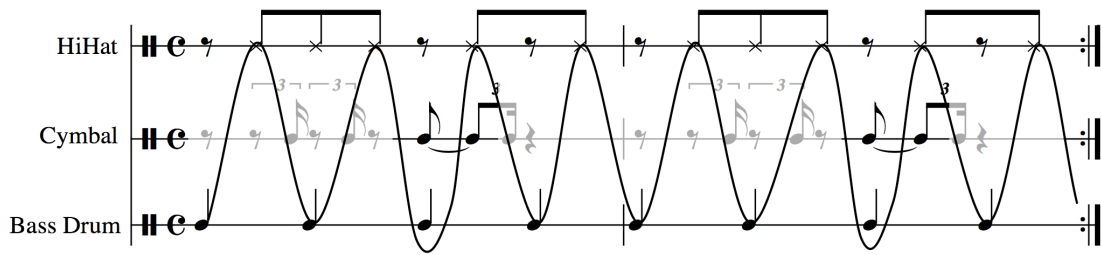
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[95] See page 78.

Figure 6.41: Notational representation of Basement Jaxx's *Jump n' Shout*, 0:06–0:14, with suggested movement curve.

But what do the other events of the cymbal pattern contribute to the groove? Placed right before both downbeats and upbeats, they could be seen to extend them by acting as pick-ups. But this does not seem to correspond to their actual effect on movement, probably because the sounds are not directly related to those they anticipate. The vertical movement pattern does not seem to change, then, but our experience of it might. These cymbal sounds introduce a sort of tension or friction into the groove, making small dents in the movement pattern established by the poumtchak.
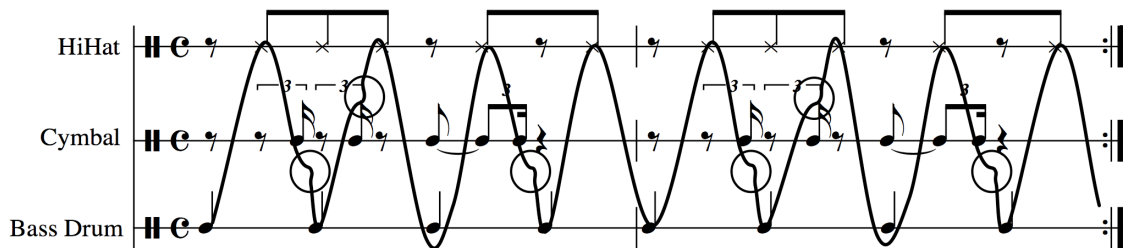

Figure 6.42: Notational representation of Basement Jaxx's *Jump n' Shout*, 0:06–0:14, with suggested movement curve and possible tension points circled.
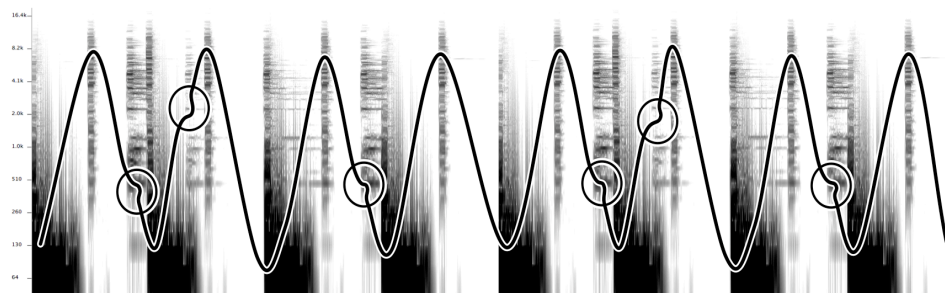

Figure 6.43: Sonogram of Basement Jaxx's *Jump n' Shout*, 0:06–0:14, with suggested movement curve and possible tension points circled.

Soon a snare drum joins in through three similar but not identical sounds that interact in yet other ways with the dominant movement pattern:
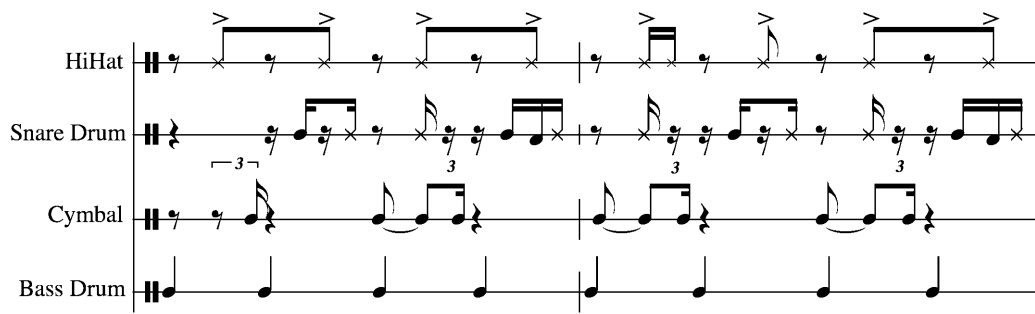
Figure 6.44: Notational representation of Basement Jaxx's *Jump n' Shout*, 0:18–0:21.
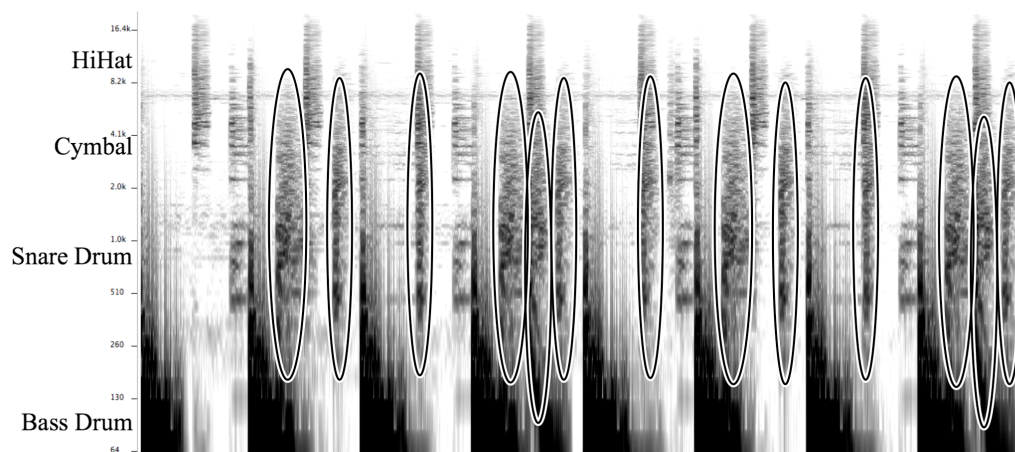

Figure 6.45: Sonogram of Basement Jaxx's *Jump n' Shout*, 0:18–0:21, snare drum sounds circled.

The excerpt represented above is eight beat-cycles (two 4/4 measures) further into the track (measures 7 and 8). Here the hi-hat is clearly boosted in the mix compared to the preceding part (measures 1 to 6) as can be seen on the sonogram below of measures 6 and 7.
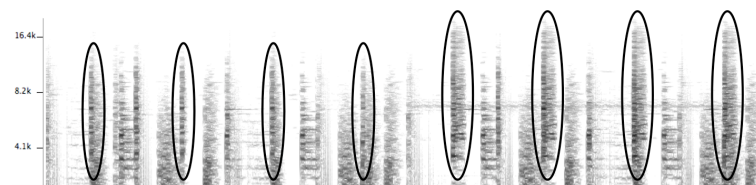

Figure 6.46: Excerpt from sonogram of Basement Jaxx's *Jump n' Shout*, 0:16–0:19.

The introduction of the snare drum pattern makes the hi-hat appear to recede in the mix – to reinstate the poumtchak pattern, then, the hi-hat needs to be boosted.[96] The cymbal pattern is also somewhat simplified at this point, probably to avoid colliding with the snare drum pattern.

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[96] See further discussion on page 220.

The first two snare drum events seem to have an effect similar to the cymbal pattern in creating tension or friction in the groove, while the three events ending both of the periods of four beat-cycles seem to function as a pick-up note in relation to the following downbeats. The extra snare drum sounds that fall exactly on the upbeats do not seem to have a role beyond somewhat emphasizing this specific beat.
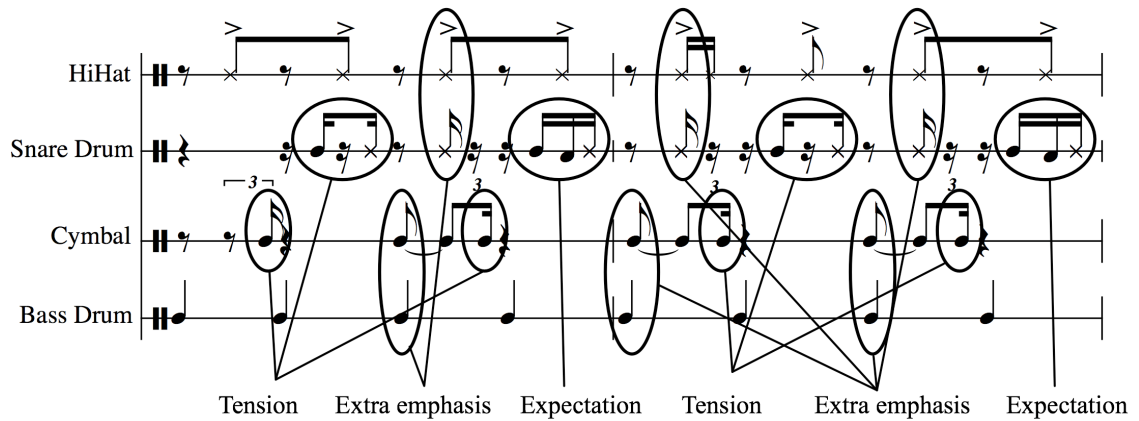

Figure 6.47: Notational representation of Basement Jaxx: *Jump n' Shout*, 0:18–0:21, with possible tension points, emphasized beats and entries producing expectation encircled

Circled in the notated example above are the various sounds that stand out from the poumtchak pattern and contribute in other ways – tension, emphasis, or expectation – to the groove. With the illustrations in the sonogram below I try to visualize these processes in relation to a movement curve.
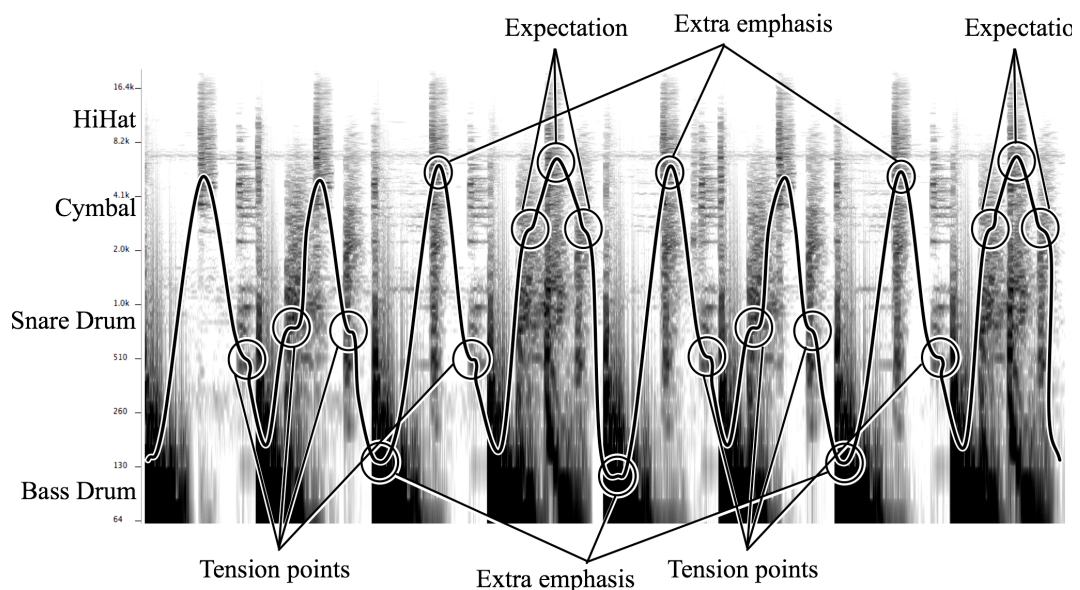

Figure 6.48: Sonogram of Basement Jaxx's *Jump n' Shout*, 0:18–0:21, with suggested movement curve and possible tension points, emphasized beats and entries producing expectation circled.

188

Given the track's tempo of 127 bpm, it may seem like a reach to identify so many influential events. But it is important to distinguish among the various roles that sounds might play in forming a groove that in turn moves the body. There are no right answers or straightforward recipes for good dance music here: these roles will influence each other in quite intricate ways, and each dancer will respond differently to them as well. But in aiming to distinguish what makes a good groove, we must allow for all of the possibilities.

COUNTERRHYTHMIC PATTERNS

One common rhythmic event in electronic dance music involves four sound events dividing three beat-cycles into four equal durations (3+3+3+3 sixteenths, or a "4:3 pattern"), or a similar pattern where the last event is excluded (3+3+2 sixteenths, or a "standard pattern").[97] Such patterns are counterrhythmic because the triplets imply a pulse relation that conflicts with the basic beat of the track. A poumtchak pattern of three beat-cycles has six possible entry points on downbeats (three) and upbeats (three), while the 4:3 pattern has four events at equal intervals during the same period. The basic beat, then, relates to a duple meter, while these counterrhythmic patterns relate to a triple meter. With regard to the funk grooves of James Brown, Danielsen describes this phenomenon as a "play between a main rhythm and a counterrhythm with competing basic pulses: they carry *a tendency toward cross-rhythm*."[98]

Such counterrhythmic patterns are common to many genres of popular music, especially various African American genres of groove-based music.[99] The guitar riff of the James Brown track *The Payback* (1973) includes the following events:

Figure 6.49: Notational representation of guitar riff from James Brown's *The Payback*.[100]

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[97] The term "standard pattern" is taken from Danielsen, who uses it because "it may be viewed as a simplified duple time version of the so-called standard pattern of African music" (Danielsen 2006:63).

[98] Danielsen 2006:63; emphasis in the original. Danielsen also discusses the difference between "counterrhythmic" and "cross-rhythmic": contrary to cross-rhythmics whose patterns of duple and triple meter continue to interact, a counterrhythmic pattern will soon return to its duple meter.

[99] The use of counterrhythmic patterns has roots in Caribbean and African music; see Nketia 1974, Chernoff 1979, Washburne 1997, Pressing 2002, and Danielsen 2006.

[100] The illustration is taken from Danielsen 2006:64; she identifies several characteristic counterrhythmic patterns in the funk grooves of James Brown.

189

The two last events of this pattern restore its congruence with a duple meter. This is vital, according to Danielsen, because counterrhythmic occurrences should destabilize but never threaten the main pulse.[101] In electronic dance music tracks with a poumtchak pattern, the basic beat is clearer and the counterrhythmic tendency is weaker than those examples described by Danielsen. Additionally, the standard pattern is more common than the 4:3 in electronic dance music. Nevertheless, their presence evokes a counterrhythm's destabilizing tendency, and in the following I will discuss how it might influence a movement pattern.

Main example: Lee-Cabrera's *Shake It*

The 2003 track *Shake It* (tempo 128 bpm) by the American production team Lee-Cabrera (Steven Lee and Albert Cabrera) starts with a poumtchak pattern and a short drum pattern repeated every fourth downbeat. Barely audible is a piano pattern that answers the drum pattern in a call-and-response manner. The piano pattern is (probably) attenuated by a low pass filter that gradually opens during the first minute of the track.

Figure 6.50: Notational representation of Lee-Cabrera's *Shake It*, 0:00–0:04.

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[101] Butler examines a counterrhythmic pattern from the electronic dance music track Azzido Da Bass's electronic dance music track *Dooms Night (Timo Maas Mix)* that does not return to the duple meter. It has eight entries with the exact same interval during twelve beat-cycles of the basic beat, and the bassline recommences together with the beginning of this pattern only every twenty-fourth beat-cycle. Butler calls this an "embedded grouping dissonance" with reference to Harold Krebs's study of the music of Schumann. "Rhythmic dissonance" for Krebs concerns instances where there is disagreement between accentuations or central rhythmic points in the music. Butler uses "embedded" to identify examples where "one grouping dissonance is nested within another whose common durational unit is larger" (Butler 2006:158). He further describes the effect of the dissonance as "a fundamental conflict between the pure-duple values of 4/4 meter and a pure-triple dissonance" (loc. cit.), but he does not explore how any of this might affect the listener/dancer.
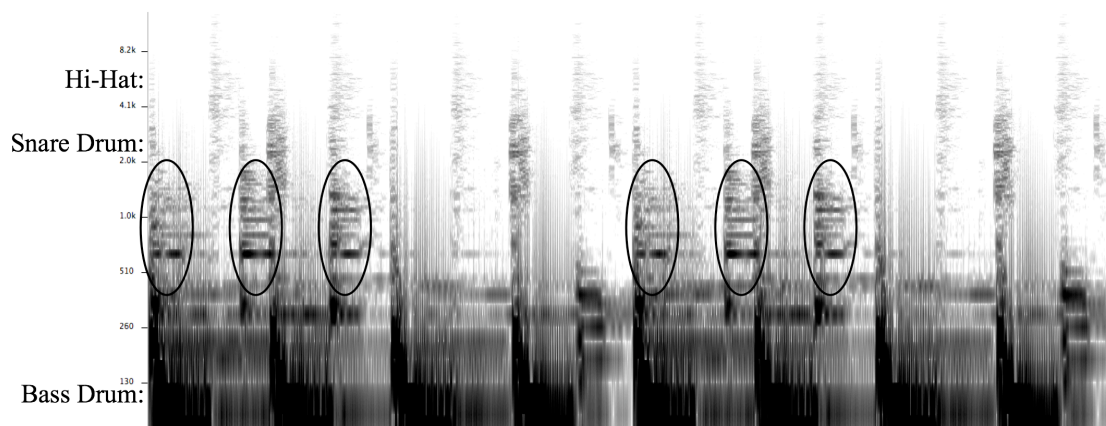
Figure 6.51: Sonogram of Lee-Cabrera's *Shake It*, 0:00–0:04, with the standard pattern circled.

The drum sound of the counterrhythmic pattern is probably the most obvious musical event at this point in the track. Its first occurrence gets the track going, together with the bass drum sound. The hi-hat sound is not very apparent at this point but helps to establish an unambiguous poumtchak pattern.

The three attacks of the counterrhythmic pattern fall in turn on a downbeat, between an upbeat and a downbeat, and on an upbeat. In light of my earlier discussions, we can therefore point to possible emphasized beats and tension points as follows:
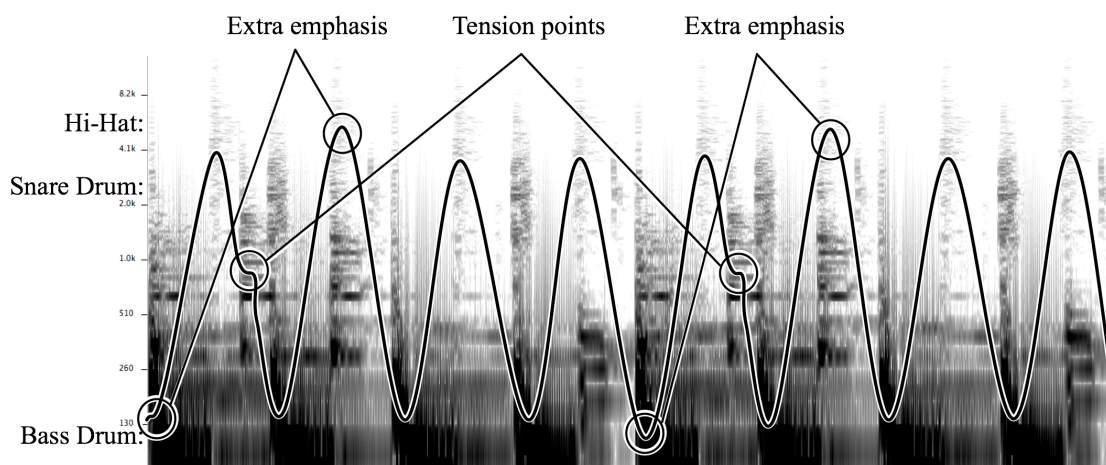

Figure 6.52: Sonogram of Lee-Cabrera's *Shake It*, 0:00–0:04, with suggested movement curve and emphasized beats and tension points circled.

The second event on the sixteenth before the second (and sixth) downbeat probably produces tension in the same manner as the complementary patterns I discussed earlier. But does the pattern influence the poumtchak in that way as well, or is it experienced as a discrete entity? Though there is no right answer as such, the standard pattern will certainly be familiar to many listeners. Common to a variety of genres (for example,

191

funk, soul, and Latin), it is a much used (and heard) rhythmic structure in popular music. Its combination with the poumtchak may well intensify the experience for many dancers, yanking them out of a vertical movement pattern or creating a (potentially pleasurable) feeling of conflict and tension in those passages. Danielsen asserts, "There is a tension between the basic pulse and its alternative, between rhythm and counterrhythm. Even if the latter is subordinate to the main basic pulse of 4/4 and does not appear as a continuous rhythmic layer, it has to be present as a destabilizer of the main rhythm, as a possible but unarticulated alternative."[102]

Supplementary examples of counterrhythmic patterns

As a build-up later in the track by Lee-Cabrera, the standard pattern starts to be repeated every second downbeat (1:00–1:09). In a similar manner, Rinôçérôse's 2002 track *It's Time To Go Now!* (tempo 120 bpm) starts with a guitar riff containing three sound events that is repeated two times at various pitch and filter settings. As can be seen on the sonogram below, this riff is in a standard pattern.
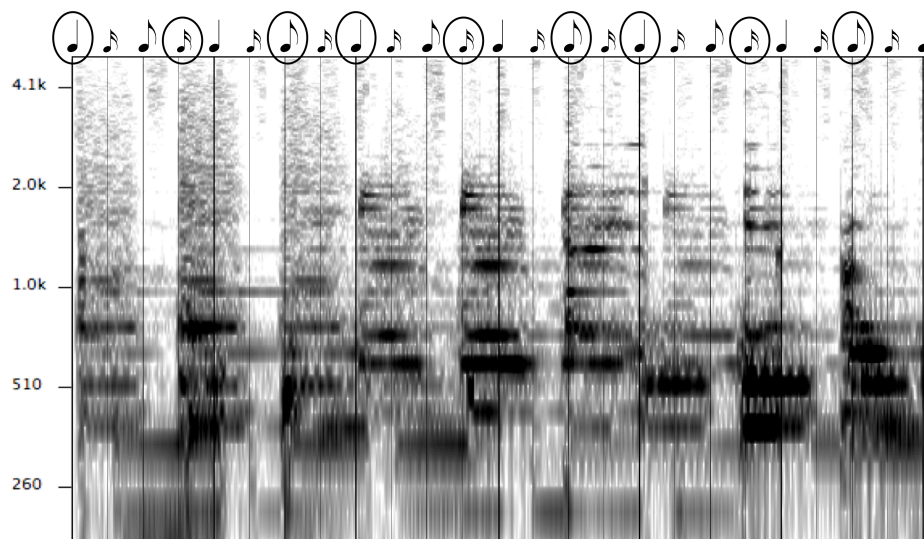

Figure 6.53: Excerpt from sonogram of Rinôçérôse's *It's Time To Go Now!*, 0:00–0:03, placed in a grid with note values. Entry points are highlighted with circled notes.

Repetitions probably enhance the effects of these counterrhythmic relations, but since each new beginning matches every second downbeat, the destabilizing effect here is not very pronounced.

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[102] Danielsen 2006:70.

The 4:3 pattern has one more event placed between a downbeat and an upbeat, and its divergent metrical pulse is therefore more evident. The 808 State track *Cübik (Kings County Perspective)* (1990; tempo 123 bpm) starts with only a synth-bass sound in its counterrhythmic pattern.[103]
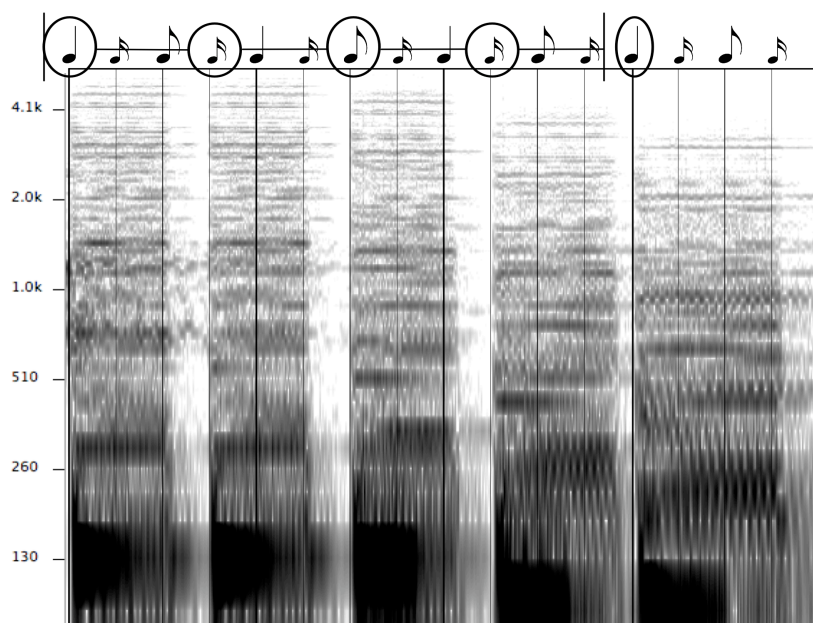

Figure 6.54: Excerpt from sonogram of 808 State's *Cübik (Kings County Perspective)*, 0:01–0:03, placed in a grid with note values. Entry points are highlighted with circled notes.

Despite the track's emphasis on this pattern, though, a culturally trained listener will probably still expect a (divergent) basic beat to start with a bass drum or hi-hat sound on the downbeats or upbeats (the bass drum in fact starts at 0:16) and will thereby accurately predict the poumtchak even before it happens.[104] In sum, the duple-meter matrix is so basic to many subgenres of electronic dance music that it is difficult to establish a seriously competing pulse by introducing counterrhythmic figures, even right from the start of a track.

MICRORHYTHM IN ELECTRONIC DANCE MUSIC

Though the examples I have presented (and the way I have presented them) perhaps imply the prevalence of quantized note values in electronic dance music, there are of course rhythmic events that do not follow this generalization. Live vocal phrases or

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[103] See page 107 for a notational representation.

[104] Butler uses Hasty's theory of "projection" on this specific counterrhythmic theme, with mixed results, as he admits himself. In Hasty's musical landscape, any time signature is theoretically possible, while the familiarity of the pattern Butler discusses in a dance music context and the resulting expectations of a certain metric cycle (or pulse) must be accounted for here; Butler 2006:102–106.

instrumental contributions in particular include temporal deviations from the basic beat of the track just as they do in other popular music genres.

Example of microrhythmic deviations: Daft Punk's *Daftendirekt*

The heavily modulated vocal phrase in the track *Daftendirekt* (1996; tempo 111 bpm) by Daft Punk has the following temporal deviations in relation to the basic beat.

Figure 6.55: Notational representation of vocal phrase from Daft Punk's *Daftendirekt* with arrows of different sizes to indicate temporal deviations.

The first accentuated word ("funk") could have been notated a sixteenth note earlier, but the word is stretched out so that the end of it corresponds fairly well to the bass drum on the downbeat.[105] Thus it appears to be the starting event of a 4/4 measure, preceded by a pick-up note ("da"). These two events recall observations made earlier in this chapter concerning the fact that the downbeat may be experienced as extended via an early realization. More relevant here, however, is the way a vocal phrase provides critical points for our attention as it activates movement patterns. Compared to the snappy drum sounds, the vocal delivery here is stretched and imprecise, but it has an impact. The temporal deviations between a vocal phrase and the basic beat influence movement patterns in a somewhat different manner than if they had been drum sounds. A vocal phrase, even when it is heavily modulated and percussive itself, affords primarily vocal participation (overt or covert), so its effect on a vertical movement pattern will be more indirect. It can shape how certain downbeats or upbeats are experienced through a listener's vocal participation, which might in turn explain the looser rhythmic structure that is nevertheless considered acceptable for vocal phrases in this genre.

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[105] The basic beat of this track, formed by bass drum, snare drum, and hi-hat (starting at 0:35) is a regular backbeat rather than a poumtchak pattern. The deviations are measured in the sequencer program Digital Performer, in which the track can be aligned to a grid according to the basic beat. The largest arrow (on the word "funk") is a deviation of approximately a sixteenth note, while the second largest is less than a thirty-second note (on the words "back" and "come").

<u>Discussion of microrhythm in electronic dance music</u>

In general, however, temporal deviations from a grid may not be as important in the study of electronic dance music as they are in various other popular music genres. As a point of departure for this discussion, I will return to the Basement Jaxx track *Jump n' Shout* (see figure 6.47 and 6.48).[106]

Figure 6.56: Notational representation of Basement Jaxx's *Jump n' Shout*, 0:21–0:37.

At 0:21 a counterrhythmic pattern (the standard pattern) is added to an already quite complex groove that has many significant features in relation to movement. In the last measure, a 4:3 pattern that evokes the guitar riff of James Brown's *The Payback* occurs in both the bass and the vocals.[107] The sonogram below, representing the last eight beat-cycles (the two concluding 4/4 measures) of the notated period, attempts to chart the many incidents that produce drive, tension, and excitement in this groove.

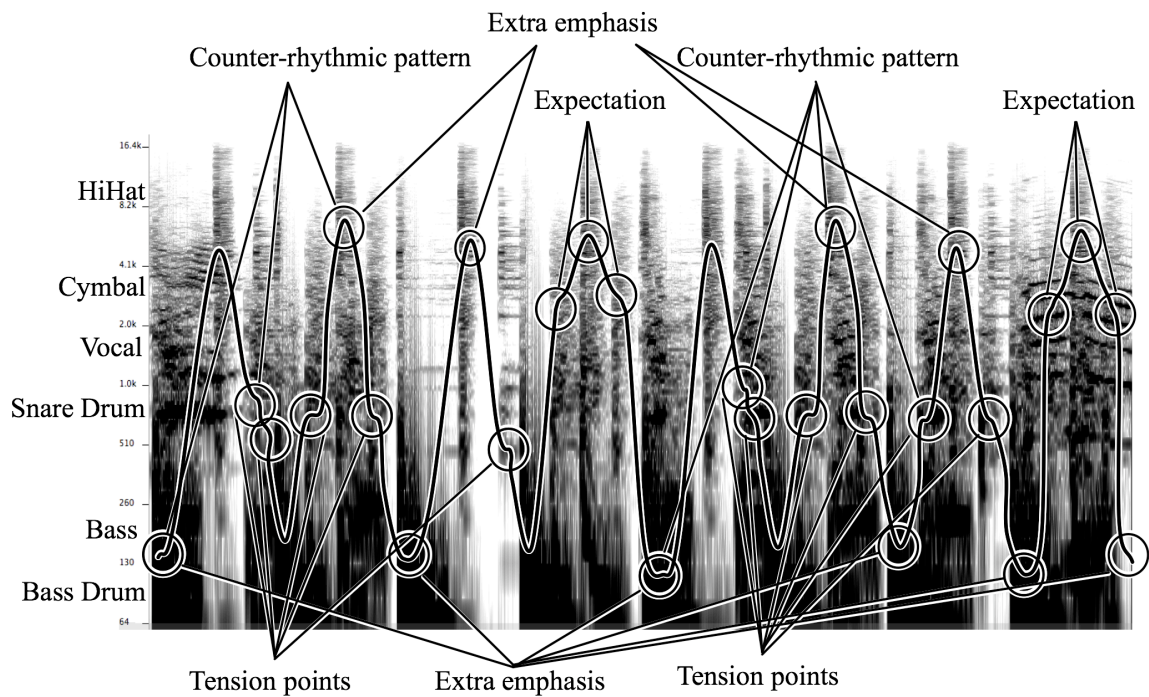[106] See page 188.
[107] See figure 6.49.

Figure 6.57: Sonogram of Basement Jaxx's *Jump n' Shout*, 0:33–0:37, with a suggested movement curve and circled possible tension points, emphasized beats, events producing expectation, and counterrhythmic patterns.

In such tracks it is important to keep events strictly placed to avoid chaos, and temporal deviations from the basic beat can in fact be quite deleterious. Furthermore, the basic beat has to provide a solid foundation: which is, in short, how producers make tracks work and how electronic dance music as a whole identifies itself. The genre emerged from the act of dancing to drum machines, which permit no deviations in timing. From the possibilities inherent in combining rhythmic patterns, new forms of dance music and movement evolved. Compared to, for example, jazz, funk, or hip-hop, house music or trance needs its basic beat to be punchy, persistent, and predictable, and these qualities are in turn rewarded by its listeners/dancers.

Nevertheless, producers of dance music have to be aware of how various sounds work together. The positioning of certain sounds slightly backward or forward in the groove may or may not be necessary. Sometimes everything works perfectly with a fully quantized track; other times adjustments are necessary. These issues emerge because the sounds interact, not because a groove somehow demands more complexity. A bass drum sound with a fast attack and a descending pitch movement provides a different downbeat

196

from a bass drum sound with a slower attack. Thus, grids of note values and deviations seldom tell the whole story.[108]

Many electronic dance music tracks are actually quite straightforward in their rhythmic structures and have patterns that interact in simple ways. Analyses of their rhythm alone therefore fall short when it comes to explaining how such simple structures may be experienced as filled with drive and tension. When there are no microrhythmic deviations – no counterrhythmic elements or ambiguity in metric relations – what is left to study?

For me what is left is the rhythmic structure's relationship to the physicality implied by the music. This quality is formed through an intimate relationship between the rhythmic patterns and their sonic design. In the next two chapters I will focus upon the actual *sound* of the patterns I have discussed in this chapter.

Summary

My first analyses and discussions in this chapter concerned the various elements of the basic beat. An extra sound (snare drum or handclap) on the backbeat, together with the ongoing bass drum sound, may give extra emphasis to a movement on the downbeat and thus introduce a subtle variation to a vertical movement pattern. Pick-ups can also produce an extra "push" before either a downbeat or an upbeat.

Another contributor to the "drive" in an electronic dance music track is the host of rhythmic patterns that are present at faster pulse layers, whether they are produced by percussive sounds, synthesizer sounds, or even vocal phrases. These can act as pick-ups or constitute rhythm patterns that complement the poumtchak pattern and activate various alternative body movements. Another element related to the production of "drive" is the gradual contraction of time intervals between recurrences of specific sounds. As sound events reappear more frequently, an experience of increased intensity may activate more energetic movements.

Basslines in electronic dance music are influenced heavily by earlier genres such as funk and disco, and their pick-ups, call-and-response techniques, and relationships to the downbeat reveal important antecedents in African and African American musics. The melodic component of basslines also impacts musical verticality. If ascending or

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[108] See further discussion of descending pitch movements in bass drum sounds and microrhythmic relationships on page 218.

descending melodic movements match the "up" or "down" in the poumtchak pattern, the corresponding movement may receive extra emphasis.

While many patterns in electronic dance music tracks are closely connected to, and in many ways supportive of, the basic beat of the music, other patterns are more independent. These "complementary patterns" typically involve sound events placed before or after the downbeats and upbeats relating to the basic beat cycles and its duple subdivisions. They do not emphasize certain beats but instead compete with them to some degree, thereby introducing a certain productive tension to the experience of the groove. Counterrhythmic patterns with events between the beats that imply a competing basic pulse may work in similar ways to produce tension, but they may also be experienced as discrete. This destabilizing function is, however, less prominent here than in genres where the rhythmic structure (and the expectations it evokes) is looser.

Generally, temporal deviations between patterns and the basic beat are not as important in electronic dance music as they are in other popular music genres. In a track with several things occurring at once, it is important to keep events strictly placed to avoid chaos. Qualities related to a punchy, persistent, and predictable basic beat are appreciated (and expected) by listeners/dancers, and the rhythmic structure's relationship to the physicality of music is therefore crucial.