Squelches, Wobbles and Risers:
Continuous Processes and Subgenres in Electronic Dance Music

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Abstract

EDM is notorious for having copious genres and subgenres. There are many facets of EDM genre distinctions, but this article focuses on one musical aspect: the utilization of "continuous processes" such as crescendos, glissandi and filter sweeps of various lengths (Smith 2021). Some continuous processes signify belonging to certain subgenres. For example, acid house is known for a "squelching" sound, dubstep is known for its "wobble bass" and it is common to hear conversations about which subgenres have the most intense "risers". In general, continuous processes are used more prominently in subgenres that are more intense, psychedelic and electronic than others. The article's findings are based on analysis of production guides and fan discourse, as well as the author's fieldwork and interviews with producers. Three analytical case studies are presented, comparing the use of continuous processes in multiple versions of a work (the original mix and remixes) from different subgenres.

Keywords: genres, risers, music analysis, production techniques, interviews

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Introduction

The study of genres in music and other art forms is complicated. Genre studies asks how consumers, producers and vendors place works into various categories to facilitate cultural discourse. Foundational texts on genre in popular music from several different decades all agree that genres are social constructs, which are only partially based on formal musical characteristics.[1] Cultural-historical analysis and musical analysis are both necessary in genre studies, and this article uses both to discuss how specific production techniques are linked with various EDM genres.

Genres evolve over time, and the way the word genre is used has also evolved. In today's popular-music landscape there is a seemingly endless list of subgenres and "microgenres", and anyone can now add to that list by tagging a track with their own descriptive labels in streaming services, as the origin story of hyperpop goes.[2] On the other hand, some of the most popular artists such as Beyoncé and Taylor Swift are known for transcending genre boundaries altogether. Furthermore, as Eric Drott explained, platforms such as Spotify and Deezer use surveillance to generate personalized "mood-, activity-, and context-based playlists" that frequently change and are *not* based on traditional genre labels (2018: 255). Given all this, it may be tempting to say "genre is dead" (Johnson 2020: 177). However, I agree with Tom Johnson that "genre is not dead" and is still relevant in many ways (2020: 177).[3] As I will discuss in this article, scholars, DJs, producers and fans still speak about meaningful distinctions between EDM genres and subgenres. It is part of the cultural language that is used to communicate within EDM communities.

Other metagenres like rock, pop, metal and hip-hop also have a large number of subgenres, but EDM arguably has the *most* subgenres within its large umbrella, with a multitude of them being established well before the 21st Century and the digital streaming era (McLeod 2001: 60).[4] Kembrew McLeod's 2001 article discussed "Genres, subgenres, sub-subgenres and more" within EDM, and his main points are still relevant. McLeod argued there are many reasons for the proliferation of subgenre names, but one of the most significant is marketing strategies, which fans react to in various ways (McLeod 2001: 67-9). Artists and fan communities sometimes establish new names as a way of "subcultural gate-keeping" to differentiate insiders from outsiders (McLeod 2001: 72). This can be intimidating for those just getting into EDM culture.

Another difficulty for those learning to differentiate between subgenres is that EDM is primarily instrumental, so lyrics and vocal personas do not play a significant role in its subgenre distinctions. Instead, tempo, drum patterns, formal structure, distinctive timbres or effects and prominence of melodies (or lack thereof) are the main musical factors in EDM genre distinctions. Some of these also relate to specific instruments and production technologies that are associated with specific places and time periods, such as the Roland TB-303 synthesizer being associated with acid house in the 1980s.

Many facets of EDM subgenre distinctions have already been articulated in scholarship, including geographical, historical, cultural and musical factors (Butler 2006: 45-47; Wiltsher 2016: 416-19). This article discusses all of these and provides a scholarly update on discourse about EDM genres in the 2020s, but also highlights one aspect of the discourse

that has not been significantly discussed in previous scholarship, namely, the role of what I call "continuous processes" (such as wobbles and risers) in genre distinctions (Smith 2021).

Continuous processes are "musical gestures with continuous changes to musical parameters rather than discrete, step-by-step ones" (Smith 2021). The parameter changed can be anything, such as pitch, filter cutoff, volume or speed. Examples of continuous processes include glissandi (e.g. risers), crescendos, accelerations and filter sweeps. Continuous processes are an important aspect of EDM in general, and they have various functions in this repertoire, such as embellishing riffs with creative effects and orienting dancers toward formal structure. They are usually created by manipulating what Mark J. Butler calls "continuous controllers" such as knobs, wheels or sliders, and they are often programmed in DAWs through LFOs or automation curves (2014: 71). Sometimes, particularly for short (but still perceivable) continuous processes like wobbles, they are embedded into the distinctive timbres of electronic instruments or presets. This article adds to the discussion of EDM genres by arguing that the ways continuous processes are used or not used, particularly how prominent they are in the structure and overall sound of a track, is a significant factor in terms of the musical characteristics that help distinguish EDM subgenres.

The heuristic of continuous processes can help describe specific production techniques in more detail, and it can explain connections between various techniques in many subgenres. EDM tracks combine continuous processes with discrete processes like traditional melodies and rhythms with clearly separated notes. Figure 1 shows a screenshot from a track I made in Ableton Live 11. It demonstrates the importance of both discrete processes (rhythmic "blocks") and continuous processes (red automation lines and sine curves for LFOs).
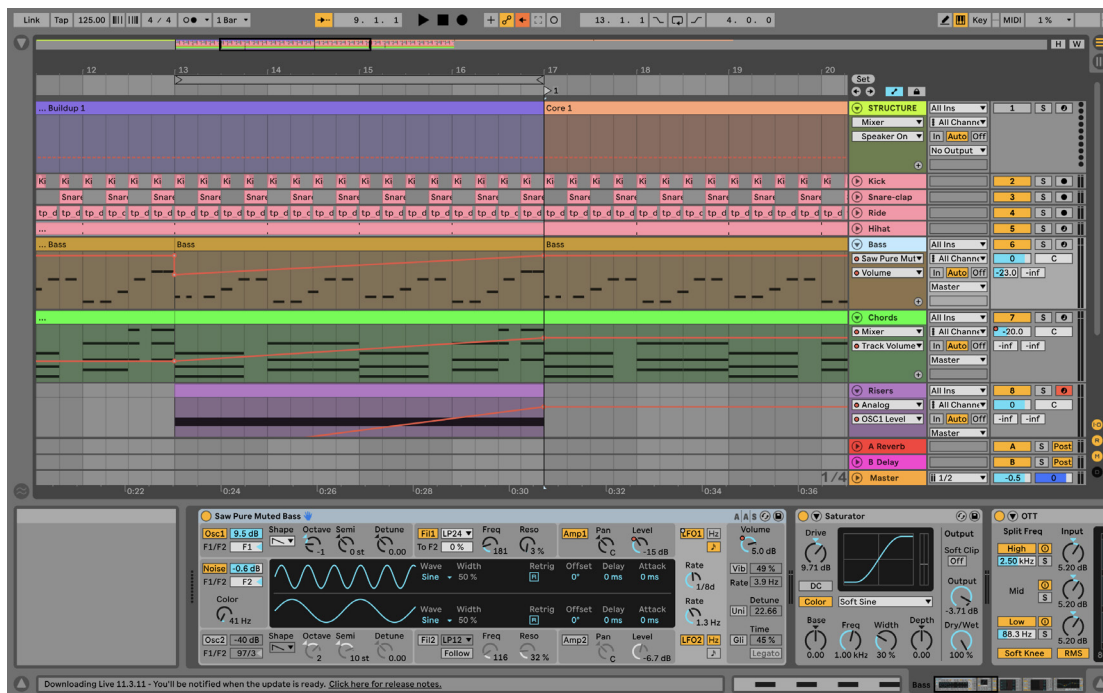

Figure 1. Screenshot of a track made by the author in Ableton Live 11.

It is important to consider *why* continuous processes such as wobbles and risers are emphasized or suppressed by producers for specific tracks and subgenres. Two important factors are the inherent instability of continuous processes and their historical link with electronic (not acoustic) instruments. In general, continuous processes are used more prominently in subgenres that are perceived as being more intense, psychedelic and especially more electronic, than others.[5] Some continuous processes are also used to signify belonging to specific subgenres. For example, acid house is known for a distinctive "squelching" sound and dubstep is known for its "wobble bass". It is also common to hear conversations in EDM culture about which subgenres have the most frequent and intense risers.

My findings are based on personal experiences and discussions with fans at EDM events in the USA and Canada, analytical readings of numerous tracks, online fan discourse, production guides and interviews I conducted in late 2022 with several producers who work in different EDM genres. One interviewee is Joe Smooth (Joseph Lorenzo Jr. Welbon), who rose to prominence as a Chicago house DJ in the 1980s and still produces many genres today.[6] Another is Man Parrish, who helped define "electro" (a.k.a. electronic funk) in the 1980s.[7] He explained to me his thought process for producing different contemporary EDM genres. A third interviewee is Db Mokk, an Italian trance producer.[8] The fourth interviewee is NGHTMRE (Tyler Marenyi), who primarily produces bass music such as dubstep and drum 'n' bass.[9] Both Db Mokk and NGHTMRE are currently active performers and producers who released recent LPs of their original music.

After an overview of the history of EDM genres, this article will discuss the state of EDM genres and scenes today, explaining how continuous processes play a role in categorizations. Following this broad discussion, the article presents some analytical case studies, comparing the use of continuous processes in multiple versions of a work (the original mix with one or more remixes) from different genres or subgenres. The first two case studies show how electro house uses continuous processes more prominently than deep house and progressive house. They compare the original mixes of "Fly Away" by Damian Lazarus and The Ancient Moons (2017; deep house) and "The Veldt" by deadmau5 (2012; progressive house) with electro-house remixes by Dennis Ferrer and Tommy Trash, respectively. The third case study compares the original mix of "Another Dose" by NGHTMRE (2022; drum 'n' bass) with a remix by DIESEL and Kozmoz (NGHTMRE 2023; dubstep).

A Brief History of EDM Genres

Before discussing current EDM genres and how continuous processes play a role in them, I will briefly discuss their historical development. Many people conceptualize EDM genres as a developing evolutionary story or family history (Wiltsher 2016: 418). Other resources provide a more detailed history, so I will only supply a brief overview here. The first EDM was an outgrowth of disco music in the 1970s. In the early 1980s, people started differentiating between the dance music heard at clubs in various American cities: house in Chicago, techno in Detroit and garage (now sometimes called garage house) in New

York (Garcia-Mispireta 2018: 40-1). House (named after a club named the Warehouse) and garage (named after a club named the Paradise Garage) were relatively similar in style, although garage was somewhat slower and more inspired by soul and gospel, whereas house was faster, more percussion-driven and more inspired by funk (Garcia-Mispireta 2018: 40). Chicago-house producer Joe Smooth told me house has "the attention driven around the drums and the rhythm of the song", whereas techno is more "aggressive" with "hard-edged sounds".[10] Techno was influenced by Kraftwerk's electropop, and is known for its mechanistic aesthetic (Reynolds 2013: 5). Luis-Manuel Garcia-Mispireta states that early techno was "a new, futuristic-sounding dance music that drew heavily from electronic funk, [and] relied more heavily on synthesized samples instead of acoustic ones" (2018: 41). All of these early types of EDM were linked with queer and African American communities.

In the mid-to-late 1980s, American house music (especially the subgenre of acid house) became popular for the rave scene in the UK (Reynolds 2013: 67). Then in the 1990s many new genres and variants developed, particularly in Europe. One was hardcore, which evolved into jungle and drum 'n' bass. These genres are significantly faster than house and techno (Wiltsher 2016: 416-7). They also feature prominent use of breakbeats, which are "drum patterns sampled from the percussion-only sections, or 'breaks,' of old funk records" (Butler 2006: 78). Another genre emerging in the 1990s was UK garage, which combined a variety of influences and later led to dubstep (Wiltsher 2016: 417). Ambient and trance also developed as a counterpoint to hardcore (Reynolds 2013: 211, 539).

By the start of the 21st century EDM was growing in popularity outside of rave contexts, and it really took off in the late 2000s with the rise of the worldwide EDM festival scene (Reuter 2021: 6). House, trance and dubstep were the most popular varieties at large festivals (Reynolds 2013: 681-2). Progressive house and trance came to be seen as almost identical, while electro house was a grittier version with the same beat (Russell 2023). In the 2010s these merged into big-room house, which some viewed as a derogatory term for mainstream commercialized EDM. This decade also saw EDM become highly influential for mainstream pop music, such that the formal structures of numerous top-40 songs became a fusion of verse-chorus form and EDM form.[11] Trap EDM also emerged in the 2010s, as a variant of hip-hop's trap subgenre. Today trap, dubstep, drum 'n' bass and other genres are often grouped together under the term "bass music". As I explain in the following section, bass music is one of several currently large categories, along with house, trance, techno, chillout and EDM pop.

The term "EDM" itself also has an interesting history. In their historical analyses, Garcia-Mispireta and Anita Jóri have shown that the abbreviation EDM for "electronic dance music" was first widely used among fan communities and scholars in the 1990s (Garcia-Mispireta 2018: n. 1; Jóri 2021: 28-31). It originally referred to various types of underground club music (Jóri 2021: 29-30). In the 2000s though, the abbreviation was co-opted by the North American music industry (St. John 2017: n. 1). For many fans and

producers "EDM" came to represent a new mainstream type of music, often associated with weekend festivals (Jóri 2021: 31-4). McLeod proposed an added slash (electronic/dance music) "because not all the musics consumed by these communities are necessarily designed for dancing"; some are intended for close listening with headphones (2001: 60). Today, many producers recognize EDM as an umbrella term, but also acknowledge its commercial connotations. Scholars still use it to refer to the broad metagenre, but sometimes separate it into various contexts with added descriptors. For example, Robin James (2015) and Fabian Holt (2017) use the term "EDM pop" throughout their work. Streaming sites sometimes refer to just this pop genre as EDM or "dance music" while the broader metagenre becomes "electronic" or "electronica". One notable example of EDM pop is Beyoncé's album *Renaissance* (2022), which is a tribute to early Chicago house and its importance in Black and queer culture (Battan 2022).

CURRENT EDM GENRES AND CONTINUOUS PROCESSES

The current state of EDM genres is as complex as ever. Music creators can add customized genre tags to their own music on Soundcloud or Bandcamp, and each streaming platform has its own system of genre labels. The algorithms of Spotify include several thousand "genre-shaped distinctions" as tracked on the site "Every Noise At Once".[12] With myriad resources available, it can be hard for someone not active in the EDM community to understand its genre categories and trends.

In this section I will discuss how continuous processes play a role in EDM genre distinctions and outline today's largest genres. My primary sources are my own interviews with fans and producers, existing scholarship, websites, articles and books that are targeted specifically to EDM producers or listeners. These include production guides such as Rick Snoman's (2019) *Dance Music Manual* and lessons from companies such as EDMProd. Another site with genre information is Beatport (an online music store). There is also Ishkur's Guide to Electronic Music, an extensive (though somewhat dated) project that includes witty, irreverent commentary.[13] Several fans have referenced this in my discussions with them. Using Ishkur's Guide we can trace the lineage of any subgenre from right to left while listening to examples (see Figure 2). Another important source (which Ishkur himself cites) is online record store Discogs.[14] Finally, DI.FM is an online radio site specifically for EDM, and it includes almost 100 channels of various genres and subgenres, each with its own detailed explanation.[15]
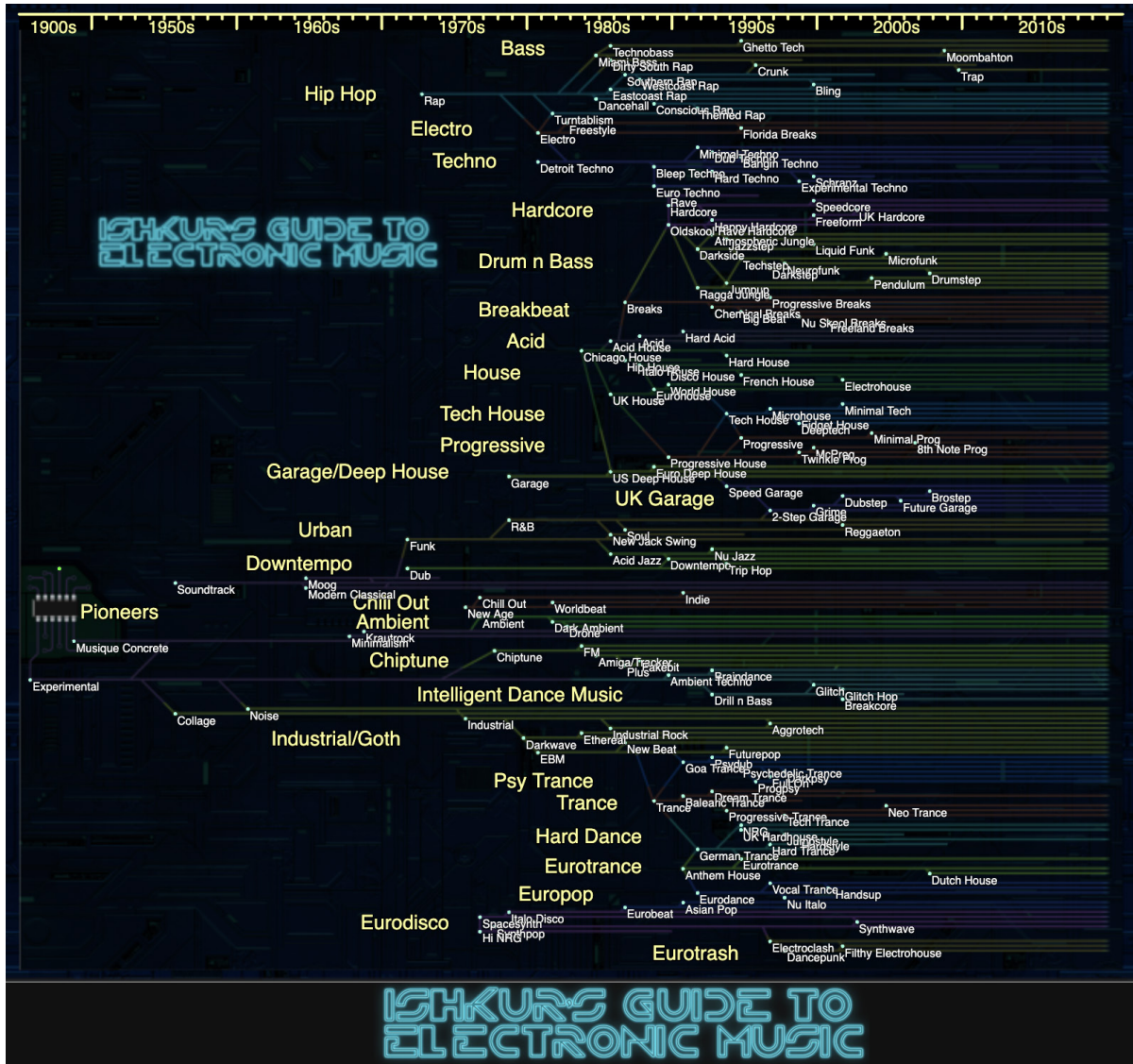
Figure 2. Screenshot from Ishkur's Guide to Electronic Music.

Before going into more detail, it is important to clarify a few common misconceptions. Although there are countless genres and subgenres of EDM, there are only several of the largest categories at a time, and these change through the generations. For example, at the end of the 1990s, the "four fundamental genres of dance music" were generally regarded as house, techno, hardcore and garage (Wiltsher 2016: 417). Also, not everyone in the EDM community agrees on specific subgenre labels, and there can be some overlap between them. Sometimes there are even multiple names for what is essentially the same subgenre, or the names for the same thing change over time. Many artists, albums and even individual tracks are described with multiple subgenre names and are often tagged as such (Charles 2020: 25-8). However, communities still develop around specific subgenre tags and groups of tags.

As mentioned previously, genres are not only defined by their musical characteristics, and especially not by a single musical characteristic being present or absent. Rather, there are standard expectations for musical features in certain genres, but degree of emphasis matters. Nick Wiltsher provides an example: "a smooth crescendo of rushing snares is unremarkable in a trance record, but notable in a dubstep track" (2016: 418). Similarly, certain musical traits (such as a "distorted" timbre) are valorized in some genres and critiqued in others (Wiltsher 2016: 418).

Continuous processes such as squelches, wobbles and risers are used more prominently in subgenres that are perceived as being more intense, psychedelic and especially more electronic than others. Tyler Marenyi (NGHTMRE) told me that he agrees with this thesis and considers what I call continuous processes to be an important part of distinctions between subgenres.[16] For him, tempo and drum patterns are the primary factors in distinguishing larger generic categories (such as house as opposed to drum 'n' bass), but subgenres that are known for their overtly electronic sounds (such as electro house) use continuous processes more than others. This makes sense given that continuous musical motions (often made with knobs, wheels, sliders and automation curves) are generally associated with electronic sounds and compositions, rather than Western classical music that is acoustic and based on the discrete grids of the 5-line staff and piano keyboard (Dolan 2012: 4).

Intended listening contexts often play a role in genre naming, and continuous processes relate to this too. In an interview, producer Man Parrish referred to continuous processes as different types of effects, and when I asked how he used them in different genres, he said he thinks about what the purpose of the genre is and the environment in which the track is likely to be heard. For example, for EDM pop or radio edits, he used "simple" effects, whereas for genres designed to be heard in underground club settings, he used more short, "trippy" and "weird" effects, such as "stretching a voice out" or shifting pitch on it.[17]

Another way continuous processes are commonly used in EDM is to build anticipation, in a buildup leading to a drop.[18] As Joe Smooth told me, DJs build anticipation through risers (ascending pitch slides or glissandi, often combined with filter sweeps) and through continuously adding more of the reverb effect to make the sounds grow roomier.[19] The specific ways this is done, however, can be a characteristic of specific subgenres or individual artists. In EDM fan discourse it is common to hear conversations about which performers and which subgenres have the most intense risers or most climactic drops.

CONTINUOUS PROCESSES IN 6 CURRENT EDM GENRES

This section discusses the specific roles of continuous processes in subgenre distinctions for 6 current EDM genres: house, EDM pop, trance, techno, bass music and chillout. Some of these are more accurately described as scenes or metagenres, but most contemporary EDM can be clearly placed into one of these large categories. This heuristic reduction is not a perfect method of summarizing current genres, but it represents an overview of my research findings. A summary of the information in this section is presented in Figure 3.

	House	EDM Pop	Trance	Techno	Bass	Chillout
Tempo (bpm)	≈ 120	≈ 120	≈ 120–140	≈ 130–140	≈ 170+ for hardcore types (e.g. drum 'n' bass). ≈ 140 with half-time drums for dubstep and trap.	Variable, often < 110
Drumbeats and rhythms	Four-on-the-floor. Groovy rhythms.	(Usually) four-on-the-floor, similar to house.	Four-on-the-floor.	Four-on-the-floor. Complex mechanistic rhythms.	Not formulaic. Often breakbeats or half-time feel.	Not standardized. Sometimes absent drums.
Continuous processes	Risers leading to drops. Short effects common in breakdown sections.	Risers leading to drops.	Long risers in buildup sections. Filter sweeps on long chords.	Not prominent. Slow, subtle. Sometimes short robotic effects.	Short effects (e.g. wobble bass, LFOs) are common. Risers usually shorter.	Not prominent. Slow, subtle.
Common (sub)genre distinctions	Timbre distinctions. Prominence of continuous processes. Specific effects.	N/A	Degree of psychedelia.	Fusions with other genres.	Tempo. Drum patterns. Specific timbres and continuous effects.	Timbre distinctions. Types of sampling. Race & ethnicity (downtempo vs. ambient).

Figure 3. A table summarizing musical characteristics for six current EDM genres or scenes.

House music is still one of the largest EDM genres. It is the direct successor to disco and is primarily defined by its drumbeat and tempo range (around 120 bpm). The drum machine beat usually features a "four-on-the-floor" kick (sounding on every beat), with snares or claps on the backbeats (2 and 4) and hi-hats usually on the offbeats in between each beat (Snoman 2019: 339). House is often described as "groovy", emphasizing syncopated rhythms in the pitched components and auxiliary percussion. It is also the type of EDM that most prominently features harmony in the form of standalone chord progressions (compared with trance that features longer melodies, EDM pop with vocal melodies and other genres where melody and harmony are scarce). House provided the biggest influence on EDM pop, which often combines verse-chorus structure with house beats to create pop songs.

Differences between house subgenres are often based on timbre and the utilization of continuous processes. For example, longer, more intense risers are generally used in more mainstream types of house, such as big room and future house (Russell 2023). Subgenres that are perceived as more electronic (such as electro house) use continuous processes with greater prominence than more acoustic subgenres such as deep house, which is characterized by its combination of house beats with elements of funk, soul or jazz (Salkind 2019: 83).

Sometimes short continuous processes are linked with distinctly electronic timbres or techniques that are characteristic of certain subgenres. For example, acid house (historically associated with Chicago in the 1980s) is known for its "squelch" effects, particularly in the basslines, created with the Roland TB-303 synthesizer (Butler 2006: 68-9). Simon Reynolds describes how the machine was typically used:

> Having programmed a bass riff on the keyboard, you tweak the knobs to modulate the pitch, accent and other parameters of each individual note in the bassline. The result is bass patterns that are as complex and trippy as a computer fractal, riddled with *wriggly nuances and glissandi*, curlicues and whorls. (Reynolds 2013: 30, emphasis mine)

An exemplary track using the squelch sounds of acid house is Phuture's (1987) "Acid Tracks". One of the group's members, DJ Pierre, said that they liked the TB-303's "acid squiggle" (Reynolds 2013: 31).

Trance is another large genre that is fairly similar to house. The tempo is the same or slightly faster than house and the drumbeat is also generally the same. The difference is primarily in musical texture and degrees of emphasis. Also, trance is of European origin and is still more associated with Europe, compared to house with its American origins. Trance is often described as a highly emotional genre with emphasis on lead melodies (compared to house's emphasis on groovy loops). It is "energetic, anthemic, and uplifting" (Russell 2023). Sometimes the subgenre of uplifting trance is used as a synecdoche (Snoman 2019: 365). It is also known for clear formal structures with long breakdown and buildup sections.[20] Relatedly, trance is known for particularly long pitch risers (one type of continuous process). Producer Db Mokk told me it is very common to have two-octave glissandi in trance buildup sections "to create tension".[21] A long riser in a buildup section can be heard at 3:15-3:28 in Db Mokk's (2022) "Close to You (Extended Mix)". Differences between trance subgenres generally revolve around how psychedelic they are perceived to be (Charles 2020: 29-35). One common continuous process that gives sounds a psychedelic feel is a filter sweep on long chords.

Techno is still a significant genre, though in my experience some fans consider it more of a historical term. Like house and trance, it is a "four-on-the-floor" genre, but its tempo is roughly 130-140 bpm (Butler 2006: 78). Techno is characterized by its mechanistic aesthetic, with clearly electronic timbres. The texture emphasizes percussion, short repetitive bass riffs and sound effects, with no clear melodies (Snoman 2019: 353-4). It is rhythmically complex with the various parts interlocking like an industrial machine. Contrasting with trance, the formal structures of individual tracks are subtle and more about general shapes than clear divisions (Butler 2006: 228). Continuous processes are not as common in techno as in other genres, and when used they are generally less prominent. Sometimes this includes slow crescendos or filter sweeps that last 16 bars or more but are not very intense. For example, in Brikha's (2011) "Read Only Memory", the kick drum gradually fades in, then the entire track subtly crescendos for several minutes. Butler calls this continuous process a "gradual transformation" in his analysis of a 1999 release of the piece (2006: 144). Subgenre names for techno often reflect fusions between it and other genres, such as hard techno

(hardcore and techno) and tech house (techno and house). One prominent subgenre is minimal techno, which emphasizes minimalist textures and subtle changes, somewhat like the music of Philip Glass or Steve Reich.

Bass music is a recent term for types of EDM that emphasize bass parts and sub-bass frequencies, combining several individual genres into one large umbrella.[22] Many of these such as drum 'n' bass can be placed on what Reynolds termed the "hardcore continuum", with hardcore's characteristic high tempos (Wiltsher 2016: 417). However, other bass genres such as dubstep and trap are known for their half-time drum feels (with the snare being on beat 3 instead of beats 2 and 4). Bass genres are generally experimental with drum patterns, often using breakbeats, or in the case of trap many hi-hat notes in quick succession (Christodoulou 2020: 4). There are bass-heavy versions of house though, which keep the house tempo and drumbeat. Some artists like NGHTMRE and NERO use different bass genres within the same live set.

In general, bass music prominently uses short continuous processes (typically lasting one measure or less) as effects that embellish the notes of bass riffs. This takes place in all formal sections, whereas in house, trance and techno it is more common in breakdown sections specifically. One short continuous process is a characteristic identifier of dubstep: the wobble bass (D'Errico 2015). This is similar to the squelching sound of acid house, but it is less associated with a specific instrument. It is often created with LFO modulation to pitch and filtering on a "bright harmonically rich" bass (Snoman 2019: 382). An example occurs at 3:06 in "None of Ur Business" (Von D 2014). Intense risers are also common in various bass genres, though they are not as long as those used in trance. They are perhaps 2 or 4 bars long instead of 8 or 16 bars long.

Chillout genres are on the other end of the spectrum, purposely being less intense, usually with slower tempos and warm, mellow timbres. The genre names and characteristics are less solidified in this category, but some common terms are ambient, downtempo and lounge. Listeners use this music to relax and unwind, whether at home or in the chill-out room of a club (Butler 2006: 35). Sometimes a drumbeat is entirely absent, but more often a steady beat is combined with gentle synth pads. Since chillout is less intense, continuous processes are not usually a salient feature. Similar to techno, when they are used it is generally in more subtle ways. One interesting genre in this category is trip-hop, which combines hip-hop beats with experimental use of samples from various African American musical styles. DJ Shadow and Nightmares on Wax are two notable trip-hop artists. Although race plays a role in characterization of many subgenre names throughout EDM, chillout seems to be the area where race divisions are most apparent, with trip-hop and downtempo known for being Black and ambient known for being White (Szabo 2021).

There are many other types of EDM, but this section has provided an overview of six large genres or scenes that comprise most current EDM. The next section of the article features some analytical case studies that demonstrate how continuous processes play a role in subgenre distinctions. This will be done by comparing the use of continuous processes in multiple versions of a work (the original mix with one or more remixes) from different genres or subgenres.

Analytical Case Studies

"Fly Away"

One interesting case study on how continuous processes affect genre is "Fly Away" by Damian Lazarus and The Ancient Moons (2017). Multiple sites like Beatport and Discogs list the original mix as being deep house, which (as mentioned earlier) is characterized by its combination of house tempos and electronic beats with elements of funk, soul or jazz music. Ishkur's Guide states that deep house is known for being "organic" such that it emphasizes "sounds and textures that could come from the real world as opposed to synthesized sounds generated via waveforms, oscillators and envelopes".[23] It is a label that has persisted in common parlance through several decades, which is uncommon for EDM subgenres, although one similar subgenre that emerged in the 2010s is future house (Russell 2023).

The original deep house mix of "Fly Away" is notable for its lack of continuous processes. There are some, including soft risers, small crescendos and some wavy electronic effects, but as in most deep house tracks they are not as common or as prominent as they are in other subgenres. The highs and lows of sonic energy are not starkly differentiated. Instead, the track uses mostly discrete processes, with a mix of acoustic and electronic instruments. The structure is verse-chorus form with prominent vocals, which is unusual for all types of EDM except EDM pop. Figure 4 shows a transcription of the vocal part in the second chorus. Notice how discrete it is, fitting neatly onto the traditional staff.

Chorus 2 - vocal (2:45)

You lift the fi - re in__ my heart   Now we will   ne - ver be__ a - part
etc.

_____ fly a-way   fly a-way   Oh__   fly a-way   fly a-way

Figure 4. Transcription of the vocal from chorus 2 in "Fly Away"
(Damian Lazarus and The Ancient Moons 2017: Track 1).[24]

Dennis Ferrer's remix of "Fly Away" was released alongside the original, but it is quite different (Damian Lazarus and The Ancient Moons 2017: Track 2). Some obvious changes are the faster tempo, new bass riff and short vocal samples (replacing lyrical verses and choruses). Continuous processes are also much more prominent in it. This remix is characteristic of the electro house subgenre, and the framework of continuous processes can help us understand why. Electro house is a subgenre that came to prominence with EDM festivals in the late 2000s and 2010s. The term has not been commonly used for new music in the 2020s, but the currently popular bass house has similar musical traits. Electro house is one of numerous subgenres known for having intense drops, but it is also known for having sounds and effects that are overtly electronic, contrasting with the acoustic and soulful aspects of deep house. Many of the electronic effects feature continuous processes like changes in pitch, echo, pan or speed.

Simon Reynolds states that electro house features "dirty bass" sounds, created with sawtooth waves that are used to make "grinding and whirring" bass lines (2013: 682). Similarly, DI.FM describes electro house as having "powerful buzzing basslines" and "party rocking drops".[25] Producer Aden Russell writes that electro house features "synth sounds to create risers for energy, like noise and pitch-modulated oscillators" (2023). All of this explains why electro house features more prominent use of continuous processes than other types of house, and Ferrer's remix of "Fly Away" is a good example of this.

In the remix, many of the most prominent continuous processes occur in the breakdown-buildup section, which breaks down the texture of the track before building up the tension leading to a climactic drop.[26] Figures 5-9 present analysis of this section. One sound layer that is new in the remix (not in the original) is introduced right at the start of the breakdown. It features an alternation between pitches G2 and A2, with continuous movement between them. The speed of the alternation also changes continuously, first accelerating then decelerating. The decrescendo (as it fades out) is also another continuous process. A transcription such as the one in Figure 5 can be helpful for understanding some aspects of this sound layer, but it cannot represent the continuous aspects well. One way to represent that better is through a line graph for the speed of the alternation (Figure 6), which approximates what Ferrer might have visually seen as an automation curve. This graph was created through my own listening to the track slowed down and with the alternation emphasized.

Breakdown (1:55)
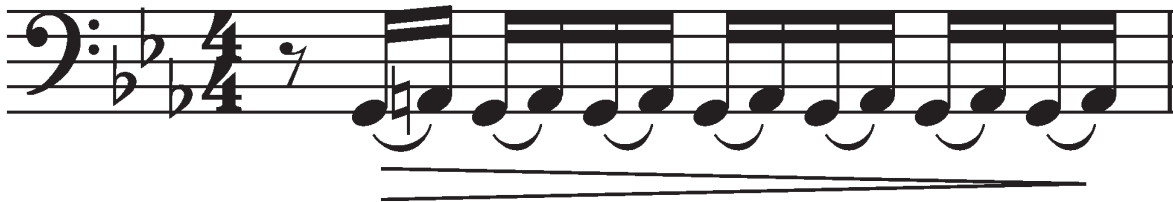
accel.   *rit.*

FIGURE 5. TRANSCRIPTION OF THE G-A ALTERNATION IN "FLY AWAY (DENNIS FERRER REMIX)"
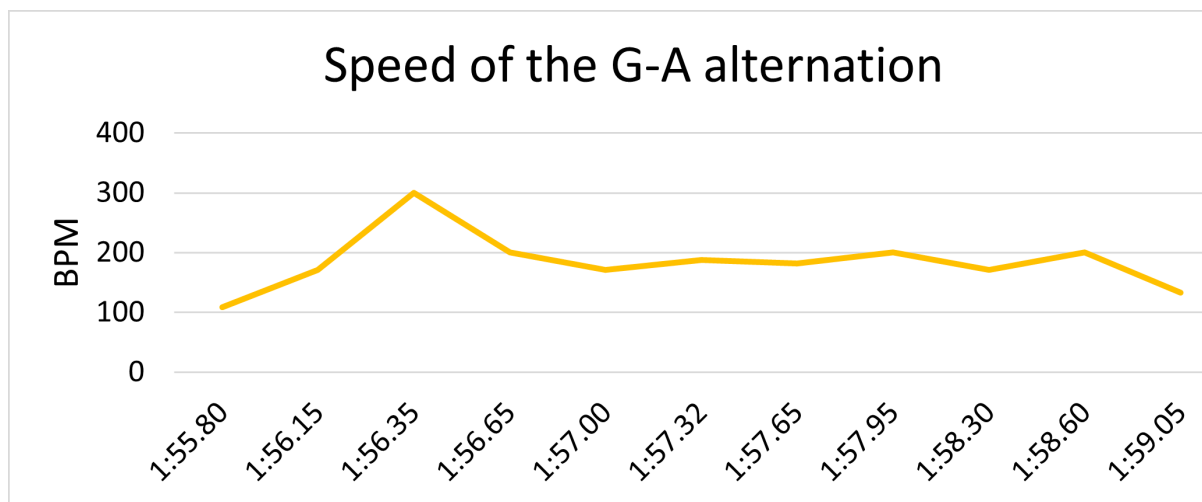(DAMIAN LAZARUS AND THE ANCIENT MOONS 2017: TRACK 2).

FIGURE 6. LINE GRAPH OF THE G-A ALTERNATION'S SPEED (1:55-1:59) IN
"FLY AWAY (DENNIS FERRER REMIX)" (DAMIAN LAZARUS AND THE ANCIENT MOONS 2017: TRACK 2).

Another sound layer that fades in as the G-A alternation fades out (around 2:00 in the track) is what I call the "sliding riff". In this riff, short continuous glissandi add embellishment in between the discrete pitches, which is common in electro house and many EDM subgenres that are known for emphasizing electronic effects. Figure 7 is a transcription that shows the perceived pitches, and Figure 8 is a melodic range spectrogram showing some of the slides between pitches.[27]
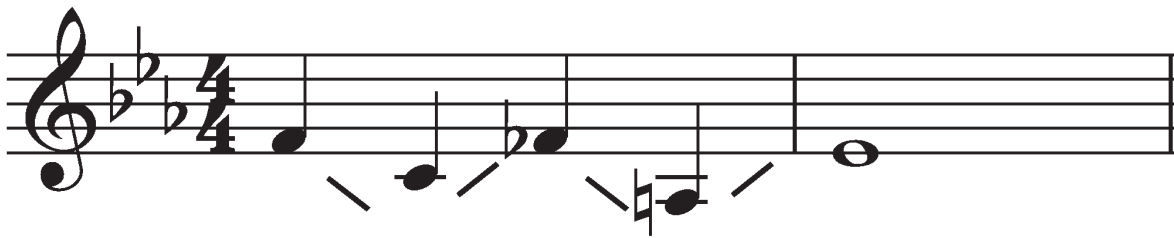
FIGURE 7. TRANSCRIPTION OF THE "SLIDING RIFF" THAT FADES IN AROUND 2:00 IN
"FLY AWAY (DENNIS FERRER REMIX)" (DAMIAN LAZARUS AND THE ANCIENT MOONS 2017: TRACK 2).
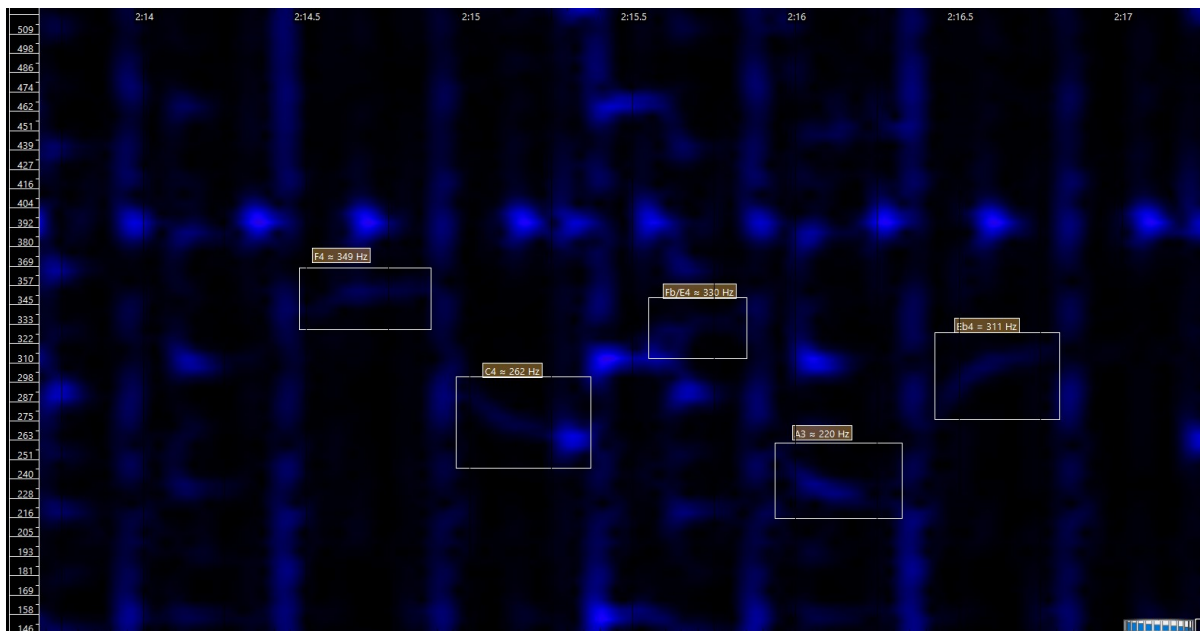LINES REPRESENT CONTINUOUS PITCH SCOOPS AND FALLS.

FIGURE 8. MELODIC RANGE SPECTROGRAM OF THE "SLIDING RIFF" (2:14-2:17) IN
"FLY AWAY (DENNIS FERRER REMIX)" (DAMIAN LAZARUS AND THE ANCIENT MOONS 2017: TRACK 2).

After the sliding riff is firmly established in the texture, a voice layer enters at 2:17. This voice is from the original mix, but in the remix it has timbral effects (such as echo) added to make it sound more electronic and spacey. The spacey voice, and later another voice added by Ferrer for the remix, combine with a crescendo to build up to the climactic drop at 2:56. As expected, the continuous process of the crescendo is more pronounced in the electro house remix compared with the original mix, although it is still not a huge crescendo relative to some other EDM tracks. Figure 9 shows the entire breakdown-buildup section visually in multiple ways, highlighting how continuous processes play a significant role.
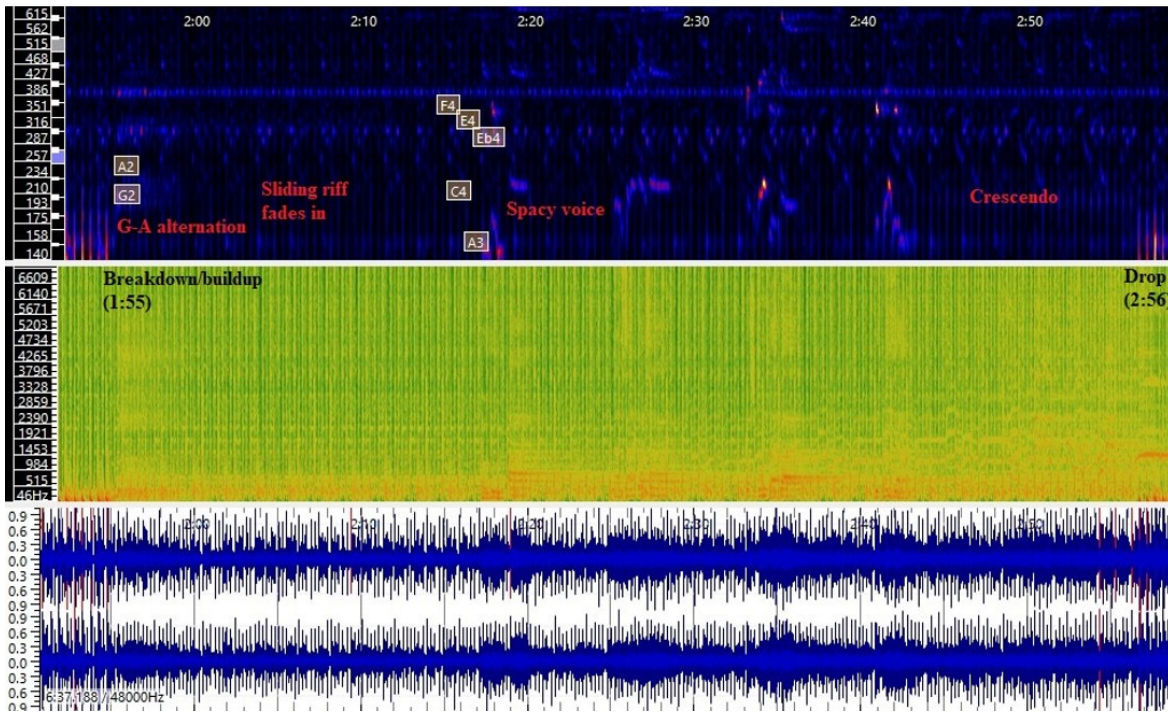
Figure 9. Visual representation of the entire breakdown-buildup section (1:55-2:56)
in "Fly Away (Dennis Ferrer Remix)" (Damian Lazarus and The Ancient Moons 2017: Track 2).
Top layer: melodic range spectrogram. Middle: plain spectrogram. Bottom: waveform.

Later in the track (3:54), the spacey voice gets "stretched out" and has even more echo effects applied to it. At the same time, there is a very low repeated sound effect that fits Reynolds' description of the "whirring" bass characteristic of electro house (2013: 682). These two layers that feature continuous processes are transcribed in Figure 10. The whirring bass sound starts well before this though, at 3:27 in a regular bass register, before quickly descending to a range where it is almost imperceptible and more felt than heard. To summarize the findings from this case study, there are many continuous processes in Ferrer's remix that help enculturated EDM listeners place it in the subgenre of electro house, compared with the original deep house mix that features few continuous processes.
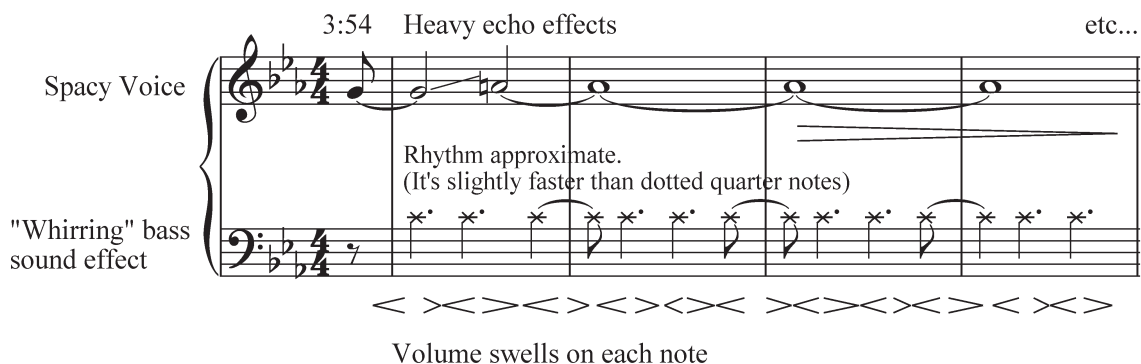

Figure 10. Transcription of the "spacey voice" and "whirring bass" at 3:54
in "Fly Away (Dennis Ferrer Remix)" (Damian Lazarus and The Ancient Moons 2017: Track 2).

"The Veldt"

For another case study, compare the original progressive house mix of "The Veldt" by deadmau5 featuring Chris James with Tommy Trash's electro house remix (deadmau5 2012). The subgenre of progressive house originated with some UK artists in the 1990s, who wanted to distance themselves from the original American house sound (Reynolds 2013: 519). The adjective "progressive" does mean forward-thinking and experimental in EDM circles, but less so than in rock communities (as in progressive rock), because by the early 2010s progressive house was associated with successful mainstream artists such as Eric Prydz and deadmau5. Musically, progressive house is known for long tracks that add more and more layers over time and feature prominent lead melodies (Russell 2023). It is similar to trance and the two are often conflated, although trance is more energetic and uplifting, while progressive house usually has a more chill sound with warm, mellow timbres (Russell 2023). Compared to electro house (which is harsher and more overtly electronic), progressive house uses fewer continuous processes, and those that it does use (such as automation on reverb) are not very salient (Snoman 2019: 331).

The original progressive house version of "The Veldt" exemplifies this, as can be heard in the final buildup section that leads to the last drop at 7:59. The spectrogram and waveform in Figure 11 show some continuous changes in volume and timbre, but these processes are not prominent. There *are* continuous processes that build up to climactic moments in this track, but they are not very steep or loud.
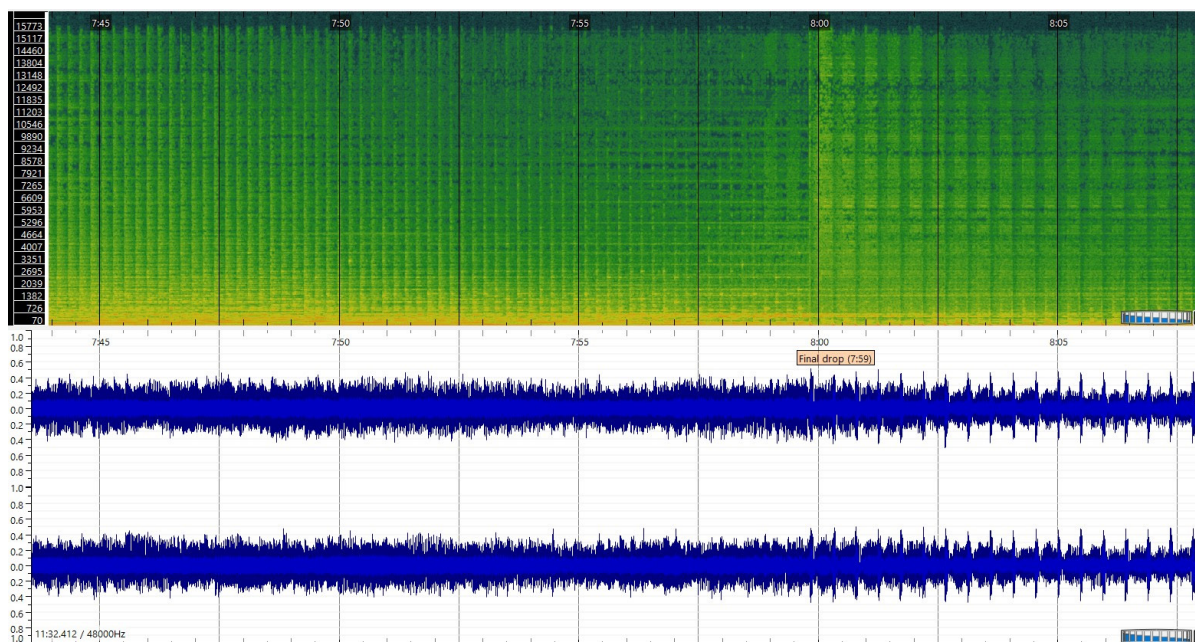

FIGURE 11. SPECTROGRAM AND WAVEFORM OF THE FINAL BUILDUP AND DROP (APPROXIMATELY 7:45-8:10) IN "THE VELDT" (DEADMAU5 2012: TRACK 1).

The Tommy Trash remix, on the other hand, features bright, harsh timbres, long risers and big filter sweeps (deadmau5 2012: Track 4). Figure 12 shows a spectrogram and waveform for the final (second) buildup and drop (4:07-4:37). The waveform shows a high amount of compression and distortion, which explains the harsh timbres. This buildup section uses several prominent continuous processes to create tension. In addition to the long risers and overall crescendo, the voice that repeats "[chil]-dren made" changes timbre to gradually become more robotic. Towards the end of the buildup (around 4:30) a high-pass filter sweep gradually removes low frequencies, then a noise sweep and the snare-roll technique propel the music toward a one-beat anacrustic cue just before the drop at 4:37.[28] These processes communicate to fans that the subgenre is one with intense buildups. For example, Snoman claims the snare roll is not used in less intense genres such as progressive house (2019: 333). Also, during the core sections of this track there are many short, wobbly continuous processes that distinguish it from the original mix.[29] Some examples of this are shown at 4:41 and 4:44 in Figure 13. When comparing the original mix with the Tommy Trash remix, the differences between timbres and utilization of continuous processes are striking. The bright, harsh timbres, combined with the frequent and prominent use of various continuous processes, signify the electro house subgenre.
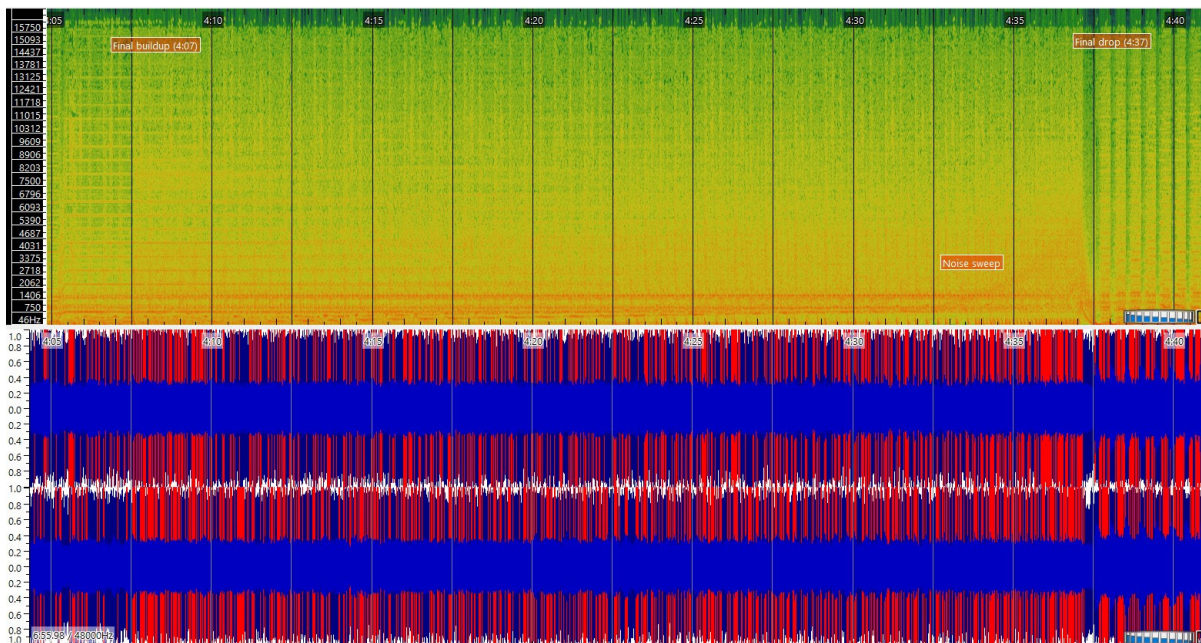

Figure 12. Spectrogram and waveform of the final (second) buildup and drop (4:07-4:37) in "The Veldt (Tommy Trash Remix)" (deadmau5 2012: Track 4).
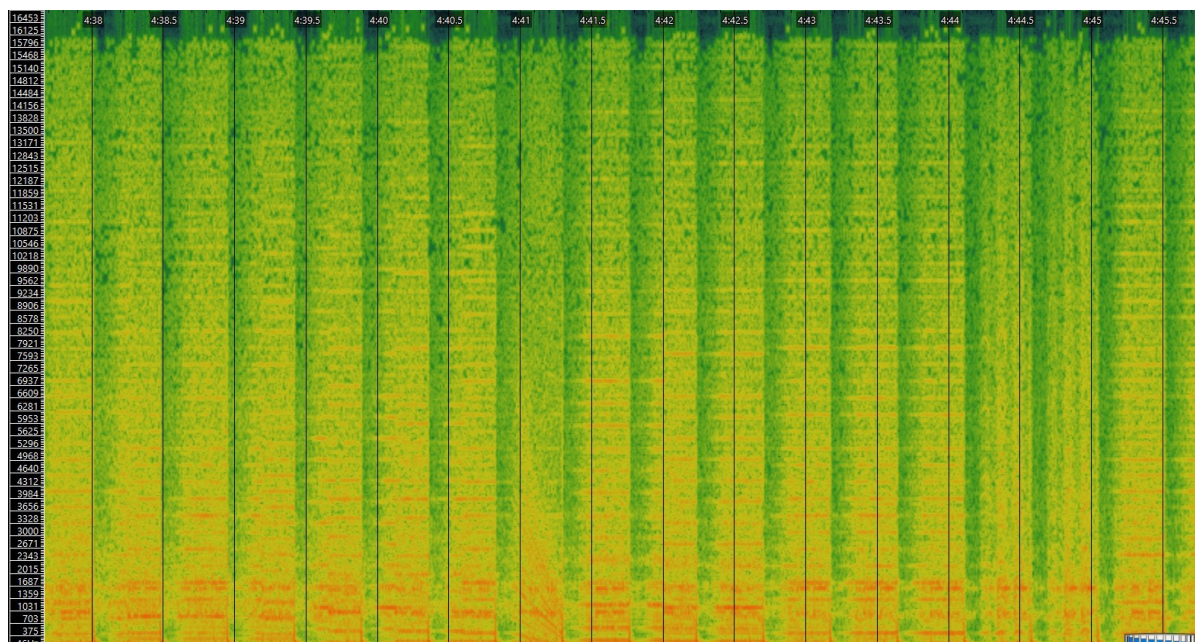
Figure 13. Spectrogram showing short continuous processes at 4:41 and 4:44
in the second core section of "The Veldt (Tommy Trash Remix)" (deadmau5 2012: Track 4).

"Another Dose"

The final case study shows how continuous processes can help distinguish between two genres of bass music: drum 'n' bass and dubstep. The original mix of "Another Dose" was released by NGHTMRE on his 2022 album *DRMVRSE*. In an interview he explained to me that the album was created with the narrative of the hero's journey in mind, and it is somewhat autobiographical.[30] "Another Dose" is the penultimate track, and it is a celebratory apotheosis. It is energetic throughout, with drum 'n' bass's characteristic fast tempo, although there is a brief section with half-time feel (2:23), and there are two sections with absent drums (0:33, 1:39) that lead to drops (0:55, 2:01).

In general, drum 'n' bass music may or may not feature salient continuous processes. The genre is more defined by its fast tempo, use of breakbeats or 2-step patterns and textural emphasis on the eponymous two elements (Christodoulou 2020: 4). However, other bass genres such as dubstep and future bass are specifically distinguished by their use of continuous processes (Russell 2023). The original mix of "Another Dose" does often use continuous processes (such as crescendos, short pitch slides and the gradual addition of echo effects), but they are subtle and do not significantly change the energy of the track. For example, in the breakdown-buildup sections (0:33 and 1:39), there are no big risers or filter sweeps, but instead the increases in energy leading to the drops come from crescendos and the continuous strengthening of the reverb effect. In the first such section, sixteenth-note drums also fade in. Figure 14 shows a transcription of some layers in the second half of the first breakdown-buildup.

FIGURE 14. TRANSCRIPTION OF SOME LAYERS FROM THE SECOND HALF OF THE FIRST BREAKDOWN-BUILDUP SECTION (0:42-0:55) IN "ANOTHER DOSE" (NGHTMRE 2022: TRACK 12).

The remix by DIESEL (American basketball icon Shaquille O'Neal) and Kozmoz is a dubstep track that is much slower than the original mix (NGHTMRE 2023: Track 14). It also uses continuous processes more prominently. This is typical for dubstep, which is known not only for its wobble bass as discussed earlier, but also its intense risers and "the biggest crowd destroying bass drops".[31] In this remix, there are three buildup-drop cycles, the first and last of which are also preceded by a breakdown. Risers are frequent and salient in the mix, not only during buildups (0:44, 1:32 and 2:35) but also during core sections (1:14, 2:03 and 3:05). There are even distinct risers just before and after the proper buildups (0:42, 1:29 and 2:32 before, and 0:59, 1:47 and 2:50 after). The number of buildup-drop cycles is also striking, with three in less than four minutes. This is quite intense and one signifier of certain genres like dubstep. In addition to risers, there are noise sweeps in both the breakdown sections. The first breakdown (0:29) starts with a descending noise sweep to decrease energy and concludes with an ascending noise sweep, along with the riser, to increase energy before the buildup section (0:44). All of these longer continuous processes are in addition to the many short ones such as the wobble bass. Since the continuous processes are so salient in this remix, they show up well on a spectrogram, as evidenced by Figure 15. To summarize, this case study of "Another Dose" unveils how continuous processes are integral to the genre of dubstep, but not to the genre of drum 'n' bass.
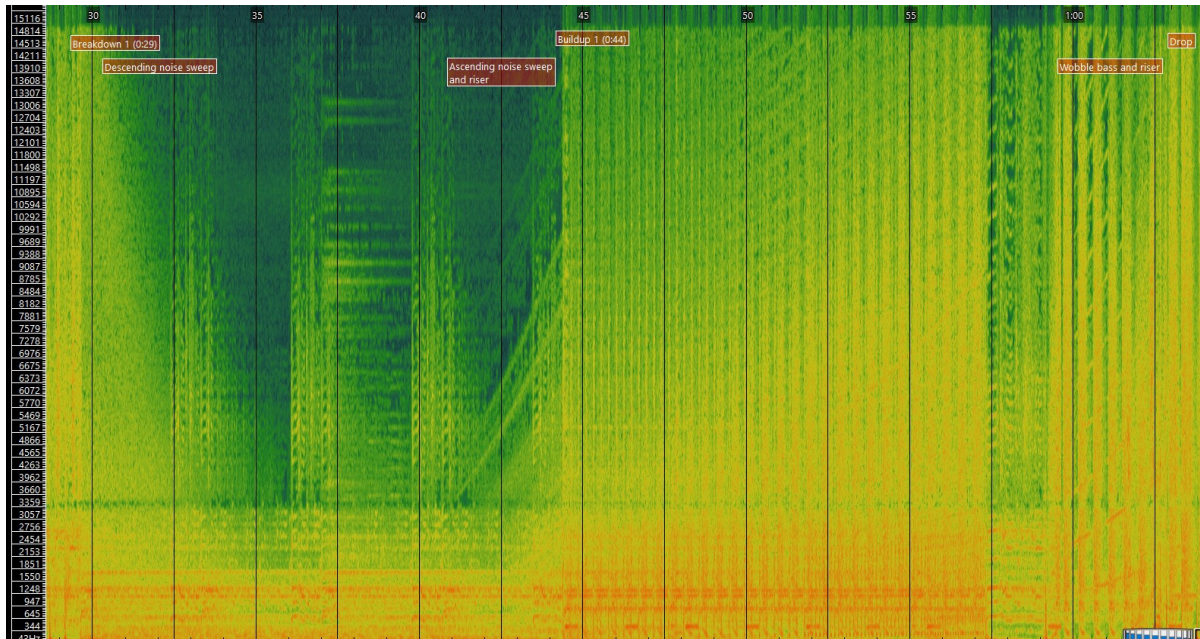
Figure 15: Spectrogram of 0:28-1:04 showing prominent continuous processes in the first break-down, buildup and drop of "Another Dose (DIESEL and Kozmoz remix)" (NGHTMRE 2023: Track 14).

Conclusion

There are many facets to the discourse of EDM subgenres, including geographical, historical and cultural factors, but this article has shown that continuous processes are one important aspect of the conversation. EDM producers, performers and fans frequently reference techniques such as squelches, wobbles and risers in their discussions of specific pieces and subgenres. The framework of continuous processes is a useful way of understanding these techniques because it can explain a variety of musical gestures under one common label. This reflects how hardware and software such as knobs, sliders and automation curves are used in the creation of EDM, as well as how creators refer to most of these processes as "effects". Continuous processes can vary greatly in length and prominence, and they can be used in many ways, but the specific ways they are used or not used is important for genre categorizations in this repertoire.

Other musical aspects of EDM genres are important too, though, and one interesting finding of this study is that continuous processes seem to be more relevant to distinctions between subgenres or smaller categories rather than larger ones. The first two case studies in the previous section (of "Fly Away" and "The Veldt") analyze differences between subgenres of house music, showing how deep house and progressive house do not feature continuous processes as prominently as electro house. The third case study of "Another Dose" discusses two genres under the umbrella of bass music, showing how certain types of continuous processes are integral to the definition of dubstep, whereas that is not the case for drum 'n' bass.

Both the dubstep remix of "Another Dose" and the electro-house remix of "The Veldt" feature harsh timbres with plenty of distortion, as well as frequent, salient continuous processes. This may raise a question about the musical differences between electro house and dubstep. The important thing to remember is that, as Marenyi told me and as these case studies corroborate, larger categories are more often defined by their tempo and drumbeats, whereas the use of continuous processes more often defines smaller categorizations such as subgenres.[32] All house music has approximately the same tempo and drumbeat, but electro house uses more prominent continuous processes than most other subgenres. Dubstep has a distinctive tempo and half-time beat, but the continuous processes (the wobble bass and intense risers) are necessary components of it too, whereas they are not for some other types of bass music. There are also cases where continuous processes are not the most effective tool for analyzing differences between subgenres. For example, the original mix of "Threshold" by NGHTMRE is dubstep (2022: Track 2). But the remix by Vanic is trap, and the differences between them are primarily in the discrete drum patterns (NGHTMRE 2023: Track 3).

Future work on EDM genres could continue the conversation by discussing the role of continuous processes in other types of EDM that have not been thoroughly explored in this article. For example, it would be interesting to compare some of the most overtly electronic and experimental types of EDM (for example glitch or IDM) with electro house or electroacoustic art music. It would also be worth investigating how the discourse about EDM subgenre distinctions compares to that of other metagenres like rock, pop, metal and hip-hop. Are fans of other metagenres as willing to have overlap between categories and evolution of hierarchical distinctions? How might this relate to various contexts in which the music is heard, such as at clubs, concerts and festivals, or with headphones or the car radio? Do continuous processes and effects play less of a role in subgenre distinctions for other metagenres? How does this relate to the methods of musical production (such as effects pedals in shoegaze rock), and how has that changed over time with the increasing digitization of production studios? For EDM, continuous processes play a significant role indeed in subgenre categorizations, as evidenced by this article's titular descriptions of musical gestures: squelches, wobbles and risers.

Notes

1 For example, see Fabbri 1982; Negus 1999; Holt 2007; Brackett 2016.
2 For more on the origin of hyperpop, see Dandridge-Lemco 2020.
3 Similar ideas about the "central irony of the 'postgenre' attitude" are discussed by Nick Seaver (2022: 137).
4 On the term metagenre, see McLeod (2001); Butler (2006, 33); Anderton (2010); Perevedentseva (2023).

5   Many psychedelic genres lie on the "PEDM genre spectrum" (Charles 2020: 28). The framework of continuous processes can help explain what makes specific types of sounds such as the "Reese bass" be labeled psychedelic, in a detailed way that points out connections with other psychedelic sounds (Perevedentseva 2023: 50).

6   Joe Smooth, interview with the author (on Zoom), 30 September 2022.

7   Man Parrish, interview with the author (on Zoom), 29 September 2022.

8   Db Mokk, email to author, 1 October 2022. Db Mokk requested that their real name remain anonymous.

9   Tyler Marenyi, interview with the author (on Zoom), 21 October 2022.

10 Joe Smooth, interview with the author (on Zoom), 30 September 2022.

11 For more on how EDM influenced formal structures in 2010s top-40 pop, see James 2015; Peres 2016; Adams 2019; Barna 2020.

12 For more explanation of "Every Noise At Once", its creator Glenn McDonald and Spotify metadata in general, see Johnson (2020: n. 15) and Seaver (2022: 130-3). As of this writing, the site is no longer currently being updated, with the last status update being in January 2024. See <everynoise.com>, (accessed 17 October 2024).

13 See Ishkur's Guide to Electronic Music at <https://music.ishkur.com/>, (accessed 24 September 2024).

14 See Discogs at <https://www.discogs.com/>, (accessed 10 October 2024).

15 See DI.FM at <https://www.di.fm/>, (accessed 17 October 2024). DI.FM also hosts regular talk shows with producers discussing various aspects of EDM.

16 Tyler Marenyi, interview with the author (on Zoom), 21 October 2022.

17 Man Parrish, interview with the author (on Zoom), 29 September 2022.

18 In this article I use the term drop to mean the instantaneous and climactic moment that low frequencies (such as the kick drum) return, usually when a core section starts. In recent years some have used the term drop to refer to an entire formal section (a primary, energetic section of a track), but this is not how EDM producers typically and traditionally use the term. For example, see how the term is used in Snoman (2019: 294).

19 Joe Smooth, interview with the author (on Zoom), 30 September 2022.

20 For an overview of formal structures in EDM tracks, see Butler (2006: 206-40) and Solberg (2014).

21 Db Mokk, email to author, 1 October 2022.

22 Tyler Marenyi, interview with the author (on Zoom), 21 October 2022.

23 From the Ishkur homepage, click on "US Deep House"; see <https://music.ishkur.com/>, (accessed 17 October 2024).

24 All transcriptions in this article are made by the author.

25 See <https://www.di.fm/electro>, (accessed 17 October 2024).

26 In most EDM genres, the breakdown and buildup are usually two distinct sections of a track, with a clear boundary between them. Sometimes, however, the demarcation between them is blurred so there is only one distinct formal section (Collins and Dunn 2021: 105-6).

27 The spectrograms and waveforms in this article were generated with Sonic Visualizer.

28 On the snare-roll technique and noise sweeps, see Smith (2021) and Snoman (2019: 332–3).

29 On the term "core" for sections of EDM tracks that have high intensity and contain most or all of the primary sound elements, see Butler 2006: 223.

30 Tyler Marenyi, interview with the author (on Zoom), 21 October 2022.

31 See <https://www.di.fm/dubstep>, (accessed 17 October 2024).

32 Tyler Marenyi, interview with the author (on Zoom), 21 October 2022.

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