

3 | Mapping the Origins of Heaviness between 1970 and 1995

A Historical Overview of Metal Music Production

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In October 1969, Black Sabbath recorded their debut album in a single day-long session at London's Regent Sounds Studio. Especially when compared with the affordances of today's digital music production technology, the conditions were rudimentary: the studio had a four-track tape machine that allowed drums, bass and guitar to be tracked, then a separate guide vocal or second guitar, which were later merged to make space for vocals or additional guitar parts. Importantly though, these limitations did not, in any way, obscure the core ingredients for what was to become 'the sound of metal'. The heavily distorted guitars were recorded at excruciatingly loud levels and double-tracked to fill out both sides of the stereo field and create a wall of sound. The bass guitar was distorted – uncommon for the time – and primarily followed the guitar riffs to give them weight and heaviness. Whereas contemporary hard rock bands recorded multiple guitar parts to embellish melodies or play counterparts, Black Sabbath's arrangements and production approach aimed at maximising heaviness through sonic weight.

Though considered a fundamental quality of the music, it is unclear what exactly 'heaviness' is, not least because of its ambiguous, context-specific and subjective nature. According to Harris M. Berger, metal 'history is most often summed up by metalheads as a progressive quest for ever-heavier music. A rich and complex concept differentially interpreted across scenes, "heavy" refers to a variety of textural, structural, and affective aspects of musical sound and is crucial for any understanding of metal'.¹ There are indications that this quest for heaviness began with the birth of metal. Tony Iommi reflected in his autobiography that where Led Zeppelin relied on powering drums, Black Sabbath focused on a 'massive guitar and bass wall of sound', aiming to 'out-heavy Led Zeppelin'.² Francis Rossi, frontman of Status Quo, pointed out that in competition for heaviness in the early 1970s, no other band but Sabbath achieved such a thunderous and weighty sound.³ Little has changed in the more than fifty years of metal music; bands still

claim that their latest record is heavier than anything they have released before, seeing increased heaviness as a signifier of improvement and proof of not having sold out.

Heaviness seems to be a combination of compositional elements, performative features and sonic characteristics. Structural aspects, most of all perceived tempo and pitch, are essential contributing parts. Their realisation through performance is equally important, as only powerful playing and tight ensemble synchronisation create the individual and collective sounds perceived as heavy. In recorded form and on the live stage, technological mediation has increasingly helped metal artists in their enduring quest for greater heaviness. The decisive role of technology becomes apparent when comparing metal releases from different periods. While songs and performances have certainly changed, the quality and aesthetics of the produced sound have significantly altered metal's sonic signature.

This chapter gives a historical overview of the development of heaviness on metal records by tracing how specific releases set standards or trends in metal music production. It focuses on early heavy metal, the thrash metal movement in the 1980s and the beginning of extreme metal in the early 1990s, concluding with an outlook of contemporary and future production aesthetics.

Early Heavy Metal

The production possibilities for Black Sabbath's debut album were limited by both the recording technology of the time and engineers unfamiliar with the new, heavy aesthetic. But recording technology evolved rapidly and satisfied the consumers' growing hunger for heavier sounds. Most recording professionals had to learn how to harness ever-evolving production tools to effectively produce the increasingly more extreme forms of metal, which required different approaches than rock music. Partly due to the general willingness to engage with the relevant challenges and to explore, new metal-specific production approaches developed quickly.

Black Sabbath's second album, *Paranoid* (1970), was already produced with 24 tracks and more studio time, allowing greater freedom to craft the band's heaviness aesthetic. On their third album, *Master of Reality* (1971), the band emphasised sonic weight by tuning the guitars and bass down by three semitones for 'Into the Void', and in the process, laid the foundations for an often-default subsequent trend.

Other now-iconic metal bands also contributed to the advance of heaviness through pioneering performance and production styles on their influential releases in the 1970s and 1980s: British acts Judas Priest, Motörhead and Venom, to name a few. Although the distinction between hard rock and heavy metal was blurred in the 1970s, a specific metal aesthetic began to formulate. The grim and doomy atmosphere of Black Sabbath and the guitar/vocal virtuosity of Deep Purple and Judas Priest combined provided a performance template for many aspiring metal bands. Elsewhere Motörhead and Venom somewhat tore up or at least heavily revised this formula, and in the process, provided inspiration for thrash and extreme metal.

Bands, engineers and producers experimented with new forms of expression. A major step towards a heavier aesthetic was enabled by introducing two kick drums or double kick pedals on a single kick. Although jazz drummers and rockers like Cream, The Who and Rush had already experimented with this approach in the 1950s and 1960s, respectively, metal increasingly built its aesthetic around fast kick drum subdivisions. As exemplified on their second album, *Overkill* (1979), Motörhead drummer Phil Taylor was one of the earliest metal performers to fully exploit this technique. According to *Overkill*'s engineer Trevor Hallesy, ten of the 24 available tracks were used for drums, and the double kick was deemed important enough to be recorded with two microphones so that other essential instruments like the snare had to be captured with one microphone only.⁴ The additional weight from the more prominent kick drum performance was particularly well-suited to the quest for greater heaviness. Evidence that the kick's role was rapidly growing is provided by engineer Tony Platt, who remembered the drum microphone setup for Motörhead's *Another Perfect Day* (1983). Pre-empting the modern practice of layering different kick drum microphones to control the high-end click, mid-frequency thump and sub-bass power, a valve microphone was blended with standard dynamic kick microphones to capture the sub-frequencies in a manner that reproduced the impact of moving air.⁵

Triggering, a technique allowing to add samples to the drum sound for more punch, was already available in the 1980s, before recording became digital. Studio reports on bands like Judas Priest and Motörhead nevertheless suggest that producers and bands avoided triggering drums and instead aimed to improve drum performance and recording quality. Whether ethical considerations prevented them from employing sampling technique is uncertain. According to producer Chris Tsangarides, and regardless of ethical considerations, numerous Judas Priest albums prior to *Painkiller* (1990) relied in part on programmed drums.⁶ Such precise

half-programmed drumming preceded the quantised drum sound that became common in the 2000s.

While the kick drum was generally gaining importance, one band experimented with the snare drum: Venom. For metal journalist Joel McIver, Venom drummer Tony Bray (Abaddon) invented thrash metal by doubling the speed of the snare, featured first in 'The Witching Hour' on Venom's debut *Welcome to Hell* (1981): 'It's that snare drum pattern which is the essence of thrash metal . . . Abaddon's drum part . . . was much faster than the usual rock and metal drum patterns, and now typifies the basis of all extreme metal.'⁷ This release marked the beginning of a race for faster performances, soon to be exploited by thrash bands from the US (Metallica, Slayer, Exodus) and Europe (Kreator, Sodom, Destruction), and an increase in heaviness.

As for the bass, Judas Priest and Motörhead continued Black Sabbath's tradition of supporting the guitar, an aesthetic still prevalent in many modern metal productions. Lemmy Kilmister of Motörhead played his bass through guitar amplifiers with the treble turned up and the bass removed, much to the frustration of the band's engineers and producers. As Trevor Hallesy remembers: 'My bottom-end challenge came more from the bass drums than the bass really because Lemmy's playing is more of a guitar-playing style than a bass-playing style – you have to use the drums for bottom end. So if you listen to Motörhead, the bass drums are really pounding away there and the bass is almost another guitar part.'⁸ Ryan Dorn similarly pointed out that even the guitars had more bottom-end than the bass.⁹ This was not much different with Judas Priest. As Tom Allom remembered: 'I used to say they were the band with no bass player, as the bass kind of followed all of the parts of the guitar. It was the fatness of the guitar sound that I liked most about those Priest albums.'¹⁰ The engineers and producers of both bands found creative ways of dealing with this problem. On Motörhead's *Another Perfect Day* (1983), Tony Platt split the bass signal to be recorded with different microphones through guitar and bass amplifiers to blend the instrument's low-end with the distorted sound of the guitar amplifier.¹¹ This technique has become standard in contemporary metal production. Judas Priest with producer Tsangarides employed a similar strategy on *Painkiller* (1990), but instead of mixing two amplifiers, they doubled the bass parts with a Moog synthesiser to receive the pick attack from the bass guitar and the low-end from the synthesiser.¹²

Guitars continued to be the backbone of metal in the 1970s and 1980s. Engineering practice hardly changed aside from the fact that higher track counts allowed two microphones, one for low-end and one for clarity and presence. Recording one guitar each for the left and right channels remained

common. Some productions added ambience microphones (Judas Priest's *Painkiller*, 1990)¹³ or short delay effects (Motörhead's *Another Perfect Day*, 1983)¹⁴ to thicken the guitars.

Thrash Metal

Thrash metal's emergence and proliferation in the 1980s complemented the development of metal music's heaviness, with artists from the newly formed sub-genre not only competing for heaviness, as was the case in the 1970s, but now also for speed. Metallica's debut, *Kill 'Em All* (1983), marked a significant increase in speed, far surpassing the previous standards set by Motörhead. Tom Warrior of Celtic Frost noted that the new US-American thrash metal bands 'had a much more clinical approach to heaviness. Whereas the British bands had this publike aura around them, the Americans just sounded like heavy machines'.¹⁵ Performances became faster and tighter and thus more effective, supported by new affordances in production technology. While the debuts of most thrash bands were raw, energetic and passionate, subsequent albums increasingly exploited overdubs recorded to a click track, alongside tape editing and punch-ins to craft clinically precise performances that were, from Metallica producer Flemming Rasmussen's perspective, almost 'computer-accurate'.¹⁶ Partly due to metal artists now seeing their album's production aesthetics as an integral part of their art, metal music's overall production standards increased considerably.

In favour of a more direct and aggressive sound, an important departure from the earlier rock aesthetic was the decreased reliance on recorded or synthetic ambience. Eschewing reverb for an improved sense of clarity, Slayer's *Reign in Blood* (1986), as just one example, translated the band's aggressive style far better than their previous two albums.¹⁷ Here it can be noted that, due to the fast performances (the album features ten songs delivered within 29 minutes), there was limited 'space' for ambience to exist and expire within, and the same can be said of slower low-frequency wavelengths. According to metal journalist Ian Christe, it was the 'first time that Slayer's sharp speed . . . was not dampened by muffled, dime-store production values'.¹⁸ Metallica's transition to a dry and direct sound began with their second record, *Ride the Lightning* (1984), and culminated on their fourth album . . . *And Justice for All* (1988). Although the latter album divided some fans due to its extremely dry and clinical sound, the record, and especially its dry drum aesthetic, was highly influential. Producer Rasmussen noted that no room microphones at all were used, and neither was reverb added in the mix.¹⁹

Drum samples were seldom employed in the major productions of the 1980s and early 1990s. They were not used on Metallica's first four albums nor on early records of other influential bands like Pantera,²⁰ at least according to claims of the respective engineers and producers.

Alongside the development of drum recording, editing and processing techniques, guitar engineering progressed significantly, itself becoming an art form. Thrash metal built an entire style around fast palm-muted guitar lines, resulting in a production requirement that adequately captured these fast and precise performances and translated them with the optimum balance between sonic weight and clarity. Rasmussen recalled the guitar tracking for 'One' on Metallica's . . . *And Justice for All* (1988) one of the most 'produced' metal guitar sounds of the 1980s: 'The guys were in a layering mode, aiming for perfection . . . By the end of the song there were six or eight rhythm guitars, played by James [Hetfield] on different amps with different sounds on top of each other. However, he was so tight that this just sounded like one big wall of guitars.'²¹ In some respects, though, the guitars were not too different from earlier productions. They were still double-tracked, one left and one right, and they were in standard tuning; 1980s thrash bands seldom employed down-tuning. Rare examples of alternative tunings include Slayer's 'Hell Awaits' (1985) and Metallica's 'The Thing That Should Not Be' (1986), tuned down one and two semitones, respectively. Referencing the link between down-tuning and perceived heaviness concerning Metallica's 'The Thing That Should Not Be', metal journalist Joel McIver compared Metallica's *Master of Puppets* (1986) and Slayer's *Reign in Blood* (1986) as follows:

Sheer heaviness – the use of slow, downtuned, deliberately 'dark' and crunchy riffing – is an area which is difficult to quantify. Both [albums] are fearsomely heavy, but *Puppets* just takes it thanks to the numbingly weighty 'The Thing That Should Not Be'. The term 'heavy' in this context also refers to the crushing, intimidating or downright frightening atmosphere of the music . . .²²

It was not until their fifth album, *Metallica* (1991), that Metallica began consistently tuning down a semitone to increase heaviness through sonic weight.

Nevertheless, as in earlier metal productions, the bass guitar continued to stand in the shadow of the electric guitar, with the prime example being Metallica's . . . *And Justice for All* (1988). The bass is all but inaudible on the album, and, as the band admitted themselves, this was linked to the passing of original bassist Cliff Burton.²³ The supporting role of the bass is nonetheless emblematic of metal productions, featuring a wall of guitars and dry, punchy

drums at the expense of low-end thickness. Whether due to their grief or other factors, this popular record inspired subsequent bands to prioritise drums and guitars over the bass.

Metal productions in the 1980s were a playground for experimentation; bands devoted themselves to exploring the opposite extremes of meticulously produced and overly raw aesthetics. What stirred the metal community in 1991 was Metallica's self-titled record, also known as the 'Black Album'. Its slick, commercial and, to some, 'overproduced' aesthetic alienated many metal fans but nevertheless was highly influential.²⁴ Notwithstanding that the songs were less extreme – slower, simpler and more melodic – metal journalists have described *Metallica* as the 'album of heaviness'²⁵ that continued to 'push heavy metal further into new realms' while maintaining the genetic code of heaviness.²⁶ Under the new direction of Bob Rock, former Mötley Crüe and Bon Jovi producer, Metallica explored the limits of what was possible in production. With a view to achieving production perfection, the studio time for each Metallica album significantly increased from several weeks for *Ride the Lightning* (1984) to nine months for the 'Black Album' (1991).²⁷ The latter was the first album the band recorded live with additional overdubs, which did not keep the band from meticulously crafting and tweaking the sounds and performances.

The increased popularity of other music genres like hip hop in the early 1990s prompted rock and metal productions to strengthen their bottom-end to stay competitive and continue their quest for heaviness. Hired largely as a result of Mötley Crüe's drum sound on *Dr. Feelgood* (1989),²⁸ Bob Rock went to great lengths with Lars Ulrich's drum production on *Metallica* (1991). Almost contrary to the dryness featured on . . . *And Justice for All* (1988), a fully three-dimensional drum sound was sought, exemplified by the kick, snare and toms being amplified through an audio system in a large room and with the resulting ambience recorded and blended with the directly captured sound.²⁹ This approach resembles the modern way of producing metal with parallel dynamic range compression and controlled reverberation added to the drum mix. According to engineer Randy Straub, parallel compression is

something that Bob [Rock] and I started doing years ago, and that's now pretty standard . . . It is intended to make the drums and bass sound punchy, and larger than they really are. Part of mixing rock music is to get more excitement in a track than really is there, and compression seems to do that. Again, it makes it sound larger than life.³⁰

As with previous Mötley Crüe productions, drum samples implemented via a digital delay unit enhanced the drum sound, with Rock revealing an

intention to ‘give as much weight to the drums as possible’.³¹ For maximising the kick’s bottom-end, a blanket tunnel with microphones enclosed within the tunnel was set up to capture the sub-sonic energy physically felt by the listener – a now-common technique in metal production.

Since ‘weight’ was the ultimate goal for the production, Rock convinced Metallica to tune down their guitars, an effect best heard in ‘Sad but True’. Notably, the bass has improved audibility compared to previous Metallica records, contributing to the heavy impression of the ‘Black Album’. Achieving a balance between powerful drums, solid bass and punchy guitars was a technical challenge, Rock admitted. The drums and bass needed heavy compression, but not the guitars. The solution was to compress the entire mix but bypass the guitars to maintain punch, directness and intelligibility.³² In other respects, Rock continued the excessive engineering practice Metallica had adopted. Increasing the number of guitar tracks to three, with an additional one for the stereo centre, enhanced the density of the guitar wall. To fully realise this aesthetic, Rock employed

multiple amps, as well as using the differences in phasing, cabs, and heads that all combined to get one sound. Different volumes on different amps, for different frequencies and clarity. That’s basically what I’ve always done to record guitars. Multiple amps and multiple mics, and finding that sound. It’s basically a process of building the sound in the studio.³³

As Rock explained, most rock productions aimed to capture the sound of a guitar played through an amplifier with one or two microphones to blend different tones and build a wall of sound.

The commercial aesthetic of *Metallica* (1991), with its catchy songs and slick production, was broadly criticised by fans. Bob Rock nonetheless inspired many metal producers of the 1990s and 2000s, showcasing the art form that metal music production has become; it spans technical sophistication and artistic craftsmanship, emblematising the high production quality expected in contemporary metal. Followers include producers Colin Richardson and Andy Sneap, who were instrumental in shaping the sound of extreme metal.

Extreme Metal

The transition from thrash and speed metal to other extreme subgenres, such as death metal, grindcore and black metal, was fluid. Death metal emerged in the mid to late-1980s and marked a significant increase in heaviness. Artists

kept the fast pace of thrash metal but continued the formula of Venom and Slayer by featuring the double kick drum more prominently and making the 'blast beat' with fast snare hits a regular rhythmic element of their music. Guitars and bass were tuned down to add sonic weight, accompanied by grunting or growling vocal styles that emphasised depth in contrast to the sung vocal tenor of heavy metal or the screams and roars of thrash metal.

Death metal took a different course in the USA than in Europe. Both metal cultures had distinct production styles influenced by particular recording studios, engineers and producers who started to specialise in extreme metal. Several US studios became known for their focus on death metal production. The most well-known facility, Morrisound studio in Tampa, Florida, was centred around producer Scott Burns, attracting many bands from Florida and beyond. Musically, Morrisound is known for recording bands featuring technically demanding structures, including Death, Morbid Angel, Cannibal Corpse, Deicide, Obituary and Malevolent Creation.³⁴ Such highly technical performances are regularly described as 'brutal'. The lack of melodic elements, seemingly chaotic and unpredictable structures, fast double kick parts, sudden tempo changes and breaks, and rhythmically pronounced guitar riffs reinforce this impression.³⁵ Guitars in Floridan death metal tended not to be tuned as low as in other death metal, which can be explained by the technical nature of playing – very fast picking, especially tremolo-picking, can be challenging with increasingly lower tunings – as well as the challenges of tuning, plus definition and intelligibility that come with it. The precise performances translated well through Scott Burns' engineering style that placed clarity before sonic weight so that the production aesthetic can be described as 'clean' and 'clear', despite the focus on 'brutality'. Fitting examples of early Morrisound productions that defined the aesthetic include Death's *Scream Bloody Gore* (1987), Morbid Angel's *Altars of Madness* (1988), Obituary's *Slowly We Rot* (1989) and Cannibal Corpse's *Eaten Back to Life* (1990). The high production standard at Morrisound gave death metal a professional sound, which gained international attention, making the Tampa signature widely known and gathering many followers.³⁶

Slightly later, European death metal was forming most famously in Sweden, specifically in Stockholm, with Tomas Skogsberg's Sunlight Studios as the centre of the scene and sound. The music emerging there was influenced by the punk-inspired German speed metal of bands like Kreator, Sodom and Destruction. With its sloppy, distorted, raw and less defined sound, Swedish death metal markedly differed from US death metal.³⁷ Entombed's album *Left Hand Path*, released in 1990, is

generally considered to have defined the Stockholm sound.³⁸ The most characteristic element of the Stockholm signature is the guitar tone. By tuning their guitars down five semitones, Swedish bands popularised a tuning that was to become standard in extreme metal. More concerned with groove than technical complexity, the bands produced at Sunlight Studios favoured a highly distorted and muddy guitar tone over the tight sounds known from Morrisound productions, making 'rawness' and 'fat heaviness' emblematic of Swedish death metal.³⁹ The tone, reminiscent of a chainsaw,⁴⁰ was a combination of the 'buzzsaw' sound of the Boss HM-2 overdrive and the 'non-buzzsaw' sound of the Boss DS-1 pedal.⁴¹ The HM-2 with all buttons turned to the maximum is recognised as the trademark of the Stockholm sound. It produced a mid-frequency-heavy sound, in stark contrast to the scooped, mid-lacking guitar sound on Morrisound productions, for a full, dense and heavy impression that influenced the coming metal in much the same way as the US competition. Other early releases produced at Sunlight Studios include Tiamat's *Sumerian Cry* (1990) and Carnage's *Dark Recollections* (1990). Subsequently, a new, melodic death metal sound began to form in Gothenburg, built around Fredrik Nordström's Studio Fredman. Although less extreme due to melodic elements, folk influences and a cleaner production style,⁴² key releases such as At the Gates' *Slaughter of the Soul* (1995), Dark Tranquillity's *The Gallery* (1995) and In Flames' *The Jester Race* (1996) influenced many bands as well as engineers and producers by showing them how well a death metal production could work by balancing Tampa's precision with Stockholm's fatness.

In the evolution of heaviness, another phenomenon should not be missed: the grindcore sound of British bands like Napalm Death and Carcass. Napalm Death's first two releases, *Scum* (1987) and *From Enslavement to Obliteration* (1988), made their mark on the international death metal scene with their extremely fast songs and blast beats, inspiring other bands to play faster.⁴³ Carcass were founded by Napalm Death runaway Bill Steer, who can be credited with tuning the guitar five semitones lower to achieve a heavier tone, a practice that would soon spread and inspire Swedish death metal guitarists like those of the bands discussed before.⁴⁴ In an interview, Carcass guitarist Mike Hickey admitted that this tuning 'isn't the most practical tuning in the world, but it's probably the heaviest', while Steer stressed the 'crushing' sound, but as well its challenges:

it has a lot of shortcomings in terms of tone because it's a very unrealistic tuning; we've really had to struggle to make it work. Since we've been doing it so long we can just about pull it off, but to be brutally honest, I think D, or, at a push C# [the common tunings of US death metal bands at the time], are the best tunings.⁴⁵

Carcass first delved into grindcore before releasing their most successful album, *Heartwork* (1993), which metal journalist Ian Christe described as ‘the Metallica Black Album of death metal [. . . and] a meticulously constructed masterpiece’.⁴⁶ Like many releases of the British extreme metal label Earache, *Heartwork* was produced by one of the most influential extreme metal producers of the 1990s, Colin Richardson. Following Bob Rock’s tradition, the production approach was similarly sophisticated to that of Metallica’s ‘Black Album’. Improving on established engineering approaches, *Heartwork* set the bar for production quality in extreme metal for years to come. The album’s engineer, Keith Andrews, shared production trivia on various online message boards, giving rare insights into the production. For the drum sound, the production team experimented with the new affordances of digital technology, converting kick and snare hits to MIDI signals in the computer. Only the kick sound was eventually reinforced by an audio sample. Their experimentation still marked the beginning of an increasing preoccupation with drum enhancement, stressing its significance in metal production.

The album’s guitar sound required considerable effort, as Steer wished for a bass-heavy yet defined tone. Inspired by the common kick drum engineering approach of blending low-end signal and high-end capture, the production team assembled two standard Marshall guitar cabinets into an oversized enclosure for the loudspeakers to increase the low-end content of the guitar signal. Later, oversized guitar cabinets from manufacturers like Mesa Boogie became popular in metal to provide a similarly deep sound. For the amplifier itself, the Peavey 5150 model was finally chosen after days of testing and combining different devices. Released shortly before the recording took place, the 5150 offered significant distortion capabilities and had a distinct character. An overdrive pedal was added to the signal chain to tighten up the oversized cabinet’s flabby response. This was achieved by setting the pedal – often an Ibanez Tube Screamer, or similar – relatively flat from the perspective of gain, tone and level, which still allowed the three stages of high-pass-filtering contained in the pedal to have the desired effect. The combination of 5150 amplifier (or newer versions of this model) and overdrive pedal affords a heavy tone with high definition at extremely low tunings and, therefore, remains a common setup of extreme metal bands even today. Metallica’s productions inspired the production team to blend the 5150 with several Marshall amplifiers for a denser texture; this technique has become an established approach in metal guitar engineering. Furthermore, instead of two guitars as typical of earlier metal, four guitar performances were recorded to enhance the wall of sound, establishing a new, enduring trend in many metal genres: quad-tracked guitars.

An alternative form of European extreme metal emerged in the late 1980s and early 1990s, most notably in Scandinavia, and became known as black metal. Ideological differences aside, black metal was clearly at odds with death metal, which professionalised production to pursue greater heaviness. Black metal artists felt that heaviness had reached its limits within the sonic confines of death metal, motivating them to go the opposite way by deliberately emphasising a lo-fi aesthetic, echoing the early releases of Venom and Bathory.⁴⁷ This sound, an alternative form of heaviness, became popular and has influenced bands to this day. Black metal's contributions to production and mainstream notions of heaviness were perhaps modest compared to those of the bands, producers and engineers described in this chapter. Notwithstanding that black metal merges and overlaps with other forms of extreme metal, it still exists in parallel with other contemporary metal that values high-quality production.

Conclusion

Metal music has changed a great deal in its more than fifty-year history. Technological advances and the professionalisation of production have accompanied and enabled the genre's ideological quest for ever-greater heaviness. Many of the techniques discussed have endured as standardised approaches in contemporary metal production. Production was incrementally brought to the fore, facilitating the music's core elements and qualities, in turn increasingly informing composition and performance. This development is reflected in many 'hyper-qualities', such as hyper-perfect performances and hyper-real sound staging. Digital audio workstations with ever more powerful editing and quantisation capabilities allowed productions to become faster, more technical and yet more precise. Hyper-compression made releases louder, partly contributing to the so-called 'loudness war'. Partly enabled by extended-range guitars with seven, eight or nine strings, advanced amplification technology and extreme audio processing tools and techniques, tunings were increasingly lowered, giving rise to entirely new metal subgenres like djent. The consequence of this development was that the commonplace practice in the 1980s – the live recording of basic tracks – practically vanished. Nowadays, drums are often recorded last and quantised to a grid or entirely replaced by programmed performances, and likewise, bass parts are sometimes programmed. Further complicated by decreasing budgets, the quest for greater heaviness demands performance precision and extremity beyond what is humanly possible.

Notes

1. Harris M. Berger, *Metal, Rock, and Jazz: Perception and the Phenomenology of Musical Experience* (University Press of New England, 1999), p. 58.
2. Tony Iommi, *Iron Man: My Journey through Heaven and Hell with Black Sabbath* (Simon & Schuster, 2012), p. 76.
3. Kory Grow, 'Heavy Metal, Year One: The Inside Story of Black Sabbath's Groundbreaking Debut', *Rolling Stone* (2020). www.rollingstone.com/music/music-features/black-sabbath-debut-album-heavy-metal-origin-interview-949070 (accessed 14 April 2021).
4. Jake Brown, *Motörhead in the Studio* (John Blake, 2010), p. 20.
5. *Ibid.*, pp. 78–9.
6. Jonathan Saxon, 'Chris Tsangarides: From Black Sabbath to Depeche Mode', *Tape Op: The Creative Recording Magazine* 70 (2009): 30–6.
7. Joel McIver, *Justice for All: The Truth about Metallica* (Omnibus, 2009), p. 52.
8. Brown, *Motörhead in the Studio*, p. 24.
9. *Ibid.*, pp. 148–9.
10. Jeb Wright, 'Producer Tom Allom: From Sabbath to Priest', *Classic Rock Revisited* (2013). www.classicrockrevisited.com/show_interview.php?id=978 (accessed 29 March 2021).
11. Brown, *Motörhead in the Studio*, pp. 75–6.
12. Saxon, 'Chris Tsangarides', p. 34.
13. Joe Matera, 'Tom Allom: "The Sounds on First Sabbath Albums Could Have Been Heavier"', *Ultimate Guitar* (2011). www.ultimate-guitar.com/news/interviews/tom_allom_the_sounds_on_first_sabbath_albums_could_have_been_heavier.html (accessed 14 April 2021).
14. Brown, *Motörhead in the Studio*, pp. 81–2.
15. Ian Christe, *Sound of the Beast: The Complete Headbanging History of Heavy Metal* (Harper, 2003), p. 90.
16. Richard Buskin, 'Metallica "One"', *Sound on Sound* (2011). www.soundonsound.com/people/metallica-one-classic-tracks (accessed 14 April 2021).
17. Jake Brown, *Rick Rubin: In the Studio* (ECW Press, 2009), p. 66.
18. Christe, *Sound of the Beast*, p. 150.
19. Buskin, 'Metallica "One"'.
20. Dan Epstein, 'How Vinnie Paul and Pantera Revolutionized the Art of Metal', *Rolling Stone* (2018). www.rollingstone.com/music/music-news/how-vinnie-paul-and-pantera-revolutionized-the-art-of-metal-666086 (accessed 14 April 2021).
21. Buskin, 'Metallica "One"'.
22. McIver, *Justice for All*, p. 149.
23. *Ibid.*, pp. 192–5.

24. Christe, *Sound of the Beast*, p. 217.
25. McIver, *Justice for All*, p. 208.
26. Christe, *Sound of the Beast*, p. 217.
27. McIver, *Justice for All*, p. 203.
28. Jake Brown, 'Bob Rock: Metallica, Mötley Crüe, & More', *Tape Op: The Creative Recording Magazine* 121 (2017): 60–4.
29. Sylvia Massy, *Recording Unhinged: Creative & Unconventional Music Recording Techniques* (Hal Leonard, 2016), p. 116.
30. Paul Tingen, 'Inside Track: Recording Evanescence's "What You Want"', *Sound on Sound* (2012). www.soundonsound.com/people/inside-track-recording-evanescences-what-you-want (accessed 14 April 2021).
31. Brown, 'Bob Rock', p. 60.
32. David Masciotra, *Metallica. 33 1/3* (Bloomsbury Academic, 2015), p. 52.
33. Brown, 'Bob Rock', p. 62.
34. Christe, *Sound of the Beast*, pp. 238–9.
35. Natalie J. Purcell, *Death Metal Music: The Passion and Politics of a Subculture* (McFarland, 2003), pp. 12–16.
36. *Ibid.*, p. 13.
37. Daniel Ekeroth, *Swedish Death Metal* (Bazillion Points Books, 2019), p. 18.
38. *Ibid.*, pp. 154–9; Purcell, *Death Metal Music*, p. 22.
39. Ekeroth, *Swedish Death Metal*, pp. 196, 214.
40. Purcell, *Death Metal Music*, p. 22.
41. Joe Matera, 'How Entombed and Sunlight Studios Gave Birth to Death-Metal Guitar Tone', *Guitar World* (2020). www.guitarworld.com/features/how-entombed-and-sunlight-studios-gave-birth-to-death-metal-guitar-tone (accessed 14 April 2021).
42. Benjamin Hillier, 'The Aesthetic-Sonic Shift of Melodic Death Metal', *Metal Music Studies* 4/1 (2018): 5–23.
43. Ekeroth, *Swedish Death Metal*, pp. 14–16; Purcell, *Death Metal Music*, p. 21.
44. Ekeroth, *Swedish Death Metal*, pp. 15, 119; Purcell, *Death Metal Music*, p. 22.
45. 'Death Lives', *Guitar World* (2004). www.goddamnbastard.org/carcass/interviews/gwinter.html (accessed 14 April 2021).
46. Christe, *Sound of the Beast*, p. 246.
47. Ian Reyes, 'Blacker than Death: Recollecting the "Black Turn" in Metal Aesthetics', *Journal of Popular Music Studies* 25 (2013): 240–57.