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DOOM

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CHAPTER 6

A Soundtrack for Mayhem

Bobby Prince, *DOOM*'s composer and audio wizard, had been working with id since the *Keen* days, picking up the job via Scott Miller. This early work was notable for two things. First, it was conducted largely in the dark. Prince told me, "We did a lot of our contact by long distance . . . by them sending me print outs of their early artwork. For *Keen,* I never saw the game until it was completed."[1] Second (and perhaps more remarkable) is the way in which early game sound was created. At this point, the process of composition was as much about tool development as it was any notion of traditional music creation.

Working with early general MIDI, Prince and his contemporaries had to create the software to run their work and had to create work that fitted the capabilities of the software as they went along. He notes that for the second *Keen* game, the audio was created using iMuse, a program Romero wrote for the purpose, creating a waveform from data and routing it through the computer's speakers (Romero says, "It let us designers basically draw the sound on the screen with the mouse. We could immediately play it back, tweak it, and save it when it sounded right"). The results were certainly minimalist, a real triumph of ingenuity in the face of extreme technological constraints. Games shipped with a 360-kilobyte ceiling in terms of file size. This meant that any audio had to be stripped back to the absolute minimum, making every note count. Creating an eight-bar loop that doesn't drive the player insane after a few minutes of repetition is a compositional challenge. Prince estimates that every note cost around 5 bytes, so

> I literally had to go in and sometimes take a note out of a chord, or very selectively pick a note that wasn't really that important or might have been blocked by another note or sound, and just hand tweak it so I could get it down to a size that would fit along with the game itself. (BP)

To put this another way, imagine composing a piece for an orchestra that charges by the note, on a shoestring budget, with the added requirement that you have to build the instruments as you go along. id and Prince did receive some help from manufacturers of sound cards, who were eager to see products that showed off their new technology to its very best, but it was still a very limited affair that frequently comes across as architectural design as much as composition.[2] Finding appropriate gaps in the tonal range of the sound was a crucial aspect of the work, to ensure that the limited audio available didn't blur into a muddy noise. The results were often frustrating; Prince likens the snare effects of the Nazi theme song in *Wolfenstein 3D* to a "little windup bear." Yet he suggests that the challenge was often equally inspiring.

> But another interesting aspect of it . . . is when you are limited, often it's easier to come up with something than when you have anything available. You can get lost in a huge or infinite palette. When you're locked in a little bit, and somehow, with the early games (*Wolfenstein 3D* wasn't for kids but *Keen* definitely was), the sounds really sounded right for that time and the feel they gave to the game. I don't know that having real instruments play those compositions would ever sound good. Or would sound right, put it that way. (BP)

Perhaps because of all of these challenges or because id knew and trusted his work, Prince was given a very open brief for *DOOM*. Supplied initially with Hall's Bible (later supplemented by examples of Adrian Carmack's artwork), Prince was instructed to create as much music as he could within the timeframe of the brief, along with all the sound and audio effects for the game. We'll deal with the music first.

Famously, the members of the id team were huge metal fans, and this greatly influenced the musical backdrop to *DOOM*. Prince notes that Tom Hall leaned slightly more toward classical, and Romero has commented that John Carmack, when it was his turn to control the office stereo, was more into Prince (as in "the artist formerly known as," not Bobby),[3] but

essentially *DOOM* was metal through and through. Prince had reservations about this, pushing more for an ambient, environmentally sensitive soundtrack. But he duly supplied a large body of music, including plenty of metalesque scores. Mainly, he says, this was to prove that metal didn't work as well as the darker, moodier pieces. It all went in anyway. Placement of the music fell to Romero, with the result that a significant number of the tracks in *DOOM* were never really intended for the final product and were basically placeholders. Speaking with Prince about this really confirmed for me what I suspected after a few months listening to the soundtrack: that there's a real quality range across the soundtrack. That's not to denigrate any particular track, but it's interesting that some tracks are much more clearly invested in and complete, in terms of layers and diversity of sounds and compositional complexity, and I don't think it's an accident that these tend to be the slower, darker, more ambient pieces that Prince favored. I'm thinking specifically of tracks such as "The Demons from Adrian's Pen" (used in E2M2) or "Nobody Told Me about id" (E2M8). Prince says the track that he feels works best in the game is "Suspense," used in E1M5 Phobos Lab (and later in E4M4 for *Ultimate DOOM*). I'm also rather fond of "Sweet Little Dead Bunny," if only because it sounds like Mr. Bungle, which can only ever be a good thing. It is interesting how, if anything, the technological limitations of the era also helped push the soundtrack away from simply a selection of soundalike metal. Prince recalls,

> There were also limited [instruments]—the guitar sounds were extremely limited. There was basically one overdriven guitar sound in the general MIDI specifications, and there's not much you can do with it. It's very weak and doesn't sound very good, and it gets old to your ear. . . . So I was facing all of those things, and that's the reason it turned out the way it turned out. If it had been digital audio, it would have been totally different. It would have sounded more like a band really did it. (BP)

In many ways, this played into Prince's hands, as he got an opportunity to use more classically influenced structures and sounds, demonstrating that an orchestral sound could be as evil as anything metal could produce. Really, though, underpinning Prince's compositional choices was not any particular musical style but a deep awareness of the functional constraints facing game music. He admits to being the first to turn music off when gaming and argues that the critically important factor was managing the

balance of having music that was serving a purpose without being repetitive and obtrusive. As much as anything else, this is a structural issue, like managing how a loop feeds back into itself without drawing attention to the fact that it's looping.

On the flip side of things, whereas the establishment of the metal soundtrack template for first-person shooters had as much to do with Romero and the rest of id, Prince takes full responsibility for setting another template: the unholy concoction of roars, hisses, grunts, and blasts that, nostalgia aside, still make *DOOM*'s audio a standout work. There are two things to say about this really. The first, remarkable thing is that the audio for *DOOM*'s monsters was created more or less in the dark, growing from single-sentence descriptions of the hellish critters supplemented, as work progressed, with sketches from Adrian Carmack and Kevin Cloud. Prince's method was simple, he says; he just imagined what noise each creature would make, "so if you close your eyes, you could see it." But that's just the man being self-deprecating, as the real success of *DOOM*'s sound effects comes from a brilliant understanding of orchestrating sound in a nonlinear space, and perhaps here, the limitations of the space (in terms of file size) in which Prince was operating actually helped things. The total number of sound entities in *DOOM* is tiny, but in a complex level, there can be a fair number of things happening at once, and Prince was careful to try and ensure that different cues were spread across the tonal range, meaning that some would bleed through the music and other audio even at a distance. *DOOM*'s famous doors, which have become so iconic the sound even appeared in a recent Doctor Who episode,[4] are audible even from the far side of some levels, as is the sound of an Imp activating on hearing the player. Although *DOOM*'s audio complexity is clearly not on the scale of a modern game, Prince notes that neither were the programs available to support and manage it, and many of the decisions about balancing audio and not letting important sound cues get buried had to be planned and implemented manually. Interestingly, he remembers that during *DOOM*'s production, John Carmack approached him to suggest that in the next game, music would be absent altogether, with only ambient, environmental noise used to sculpt the player experience. This once again shows how far ahead of the curve id's thinking was, even if the black hole of heavy rock and the temptation of having Trent Reznor write your soundtracks proved a little too attractive in reality.

So let's put all this into context. On one hand, we have *DOOM*'s metal

score creating one of the first truly iconic soundtracks in modern gaming. On the other, we have the move toward more ambient, moody, environmentally driven music in games, a long way from the arcade-style soundtracks of earlier efforts. *Doom* still stands as a master class in economic, do-it-yourself sound design. The audio effects were a quantum leap from those of *Wolfenstein 3D* and, for me, are critical to *DOOM*'s sense of world and sense of weight. The latter is one of the toughest design challenges in any virtual or simulated space, one that ranges from simple visual design to animation, artificial intelligence, and physics. Sound can play a huge role in creating a sense of weight, and *DOOM*'s crunching guns and bass bellows certainly do just this, often coming up under the melodic range of the music that is quite flimsy in comparison. Moreover, the audio sews the visuals to a sense of world, which was groundbreaking in intensity. It's hard to quantify exactly what makes the sounds of the Imps and the Cacodemons so well designed, but it's not simply a gameplay association; it's the art of an expert. Alongside the balancing and, particularly, Prince's attention to sound bleeds and overshadows, the artistic decisions sitting behind the final sound of *DOOM*'s audio play a massive part in the sense of immersiveness of the final product. Romero recognizes that *DOOM*'s sound was a "very important" part of the overall experience for the player. For me, in terms of its legacy for gaming, *DOOM* is one of the very first games where audio came out of the background and stood alongside the visuals, creating a world that is as much a product of the audio as of anything else. As Prince puts it, "I really wanted to scare the living hell out of people with the sound alone." When the player steps out of the antechamber in E2M8 and first hears the pounding, slamming, giant-piston steps of the Cyberdemon before they even see the thing, that job is already done.