Chapter One
Analysing Crysis

Analysing videogame music raises several critical problems. This chapter starts by considering these issues before moving on to a case study of the first-person action/shooter, *Crysis* (Crytek/EA, 2007). My analysis is focused on what the concepts of “play” and “form”—the basis for any aesthetic experience—might actually entail, and how they might interact. After a brief historical and philosophical contextualization of mobile form, I offer my analysis in two parts—“playing with form” and “playing with meaning”. The first discusses the aims of those who made the game, the game’s narrative structure, and how music is technically manipulated in the game’s audio engine. The second part of my analysis provides an example of a short section of gameplay and demonstrates exactly what the music engine does. Then I consider how musical meaning is categorized within the game’s data structure, and how such meanings might be engendered by the player.

Critical Issues in Videogame Studies and Ludomusicology

As described in the introduction, the videogame is a multifaceted object, due to its multimedia nature (video, audio, text). However, the interactive elements provide an additional layer of complexity. Many music games like *Guitar Hero* or *Sing Star* provide “interactive” songs insofar as the player is required to “pseudo-perform” them in real time. (In *Guitar Hero*, players use guitar-shaped controllers to press buttons in synchronization with visual cues and a popular song. *Sing Star* is a karaoke game that analyses vocal input from a microphone and provides a score based on how
accurately players perform. Both games, like all videogames, entail a virtuosic performance of sorts but in these cases, the musical performance itself is disengaged from the actual player input. Kiri Miller’s focus on the spaces between passive listening and genuine musical performances, and the virtual and the visceral, emphasizes the value of a ‘participatory culture’ contextualized within performance studies.\(^1\) The present thesis considers the same territory from a different, broader perspective.) However, recent academic papers on interactive music in videogames\(^2\), and forthcoming music games like *Fantasia: Music Evolved* (Disney Interactive Studios/Harmonix Music Systems, forthcoming 2014), push further still in attempting to realize truly bi-directional interactions between the game system and the player.

“Interactive music” (music that reacts in some way to certain stimuli) and “dynamic music” are categories employed in the videogame industry that occupy overlapping territories. There is a lack of consistency in the usage of these terms, and additional confusion arises when they are used interchangeably by the same writer. Karen Collins helpfully suggests that “dynamic music” is a broad category that encompasses “interactive” (contingent on player input) and “adaptive” (contingent on gameplay states) audio.\(^3\) Nevertheless, “interactive music” is also often used to describe simpler cue/trigger-response mechanisms.\(^4\)

Videogames of all sorts have always involved a degree of interactivity but, in the last decade, technological advancements have permitted the rapid development of so-called sandbox virtual

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\(^4\) See also Bernard Perron and Mark J. P. Wolf (eds.), *The Video Game Theory Reader 2* (New York and Abingdon: Routledge, 2009), pp. 12–13 and Stevens, Raybould and McDermott, ‘Not creepy music, but music for creeping.’
worlds in which players are afforded greater freedom to explore and pursue their own goals. With open-world gameplay now commonplace and expected, “linearity” in videogames has now become a firmly established value system in which gameplay that is considered “too linear” is frequently chastised, while virtual environments that reflect the player’s agency by offering “meaningful” consequences to their actions and decisions are greatly promoted. Nevertheless, as all publishers and critics in the games industry well know, repeatability (desirable) and subsequently, predictability (undesirable) are two of the most critical factors affecting sales. Consequently, over the last decade, there has been an ever-increasing tendency to stress non-linear playability. On the one hand then, developers are left with the problem of producing coherent, immersive, linear narratives, and on the other, they must ensure the game remains unpredictable and that players will want to replay it (an often heralded feature of “great art”, but also an important means of securing long-term commercial growth). Some of the most critically (and commercially) successful games frame non-linear elements within broader linear structures, as we shall see below. Sometimes the overriding narratives are governed by basic “branching”, with alternative pathways and even multiple endings contingent on...
the player’s choices made throughout the game. In general, though, macro-structures remain relatively determined.8

The term “immersion” is equally ubiquitous across videogame studies and journalistic writing.9 This multifarious concept is often ill defined but Gordon Calleja has offered a model (the “player involvement model”) developed through qualitative research, in an attempt to support practice with theory. He suggests that immersion (or ‘presence’), in the context of videogame studies, has been taken as a reference to ‘the shortening of the subjective distance between player and game environment, often yielding a sensation of inhabiting the space represented on-screen.’10 In the broader context of play, players of board games, for example, can also become “immersed”, at least in the sense that their focus is occupied on the game rather than anything else. Instead of these one-dimensional visions of immersion, Calleja’s holistic model proposes the new metaphor of ‘incorporation’—a ‘blending of [various] experiential phenomena afforded by involving gameplay.’11

In its “micro” (real-time gameplay) phase, the player is “incorporated” within six carefully outlined dimensions—kinaesthetic, spatial, shared, narrative, affective, and ludic. The macro phase includes all forms of involvement outside of actual gameplay, such as the initial attraction and extra-game information. Incorporation avoids the problematic connotations associated with the other terms. This model is useful because it points to specific “dimensions” affecting player immersion, and this is

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8 This is clearly the case for narrative-based games, but to an extent, it is also applicable to other genres. Even games as disparate as Chime (discussed in Chapter 2) and Crusader Kings 2 (Paradox Interactive, 2012)—both open-ended in their own way—are ultimately ordered linearly. On videogames and narrative, see the special issue guest edited by Ben Winters in Music, Sound, and the Moving Image 6/1 (Spring 2012).


11 Calleja, In-Game, p. 3.
important because it is the most often cited goal in the industry, especially for—but not exclusive
to—narrative-based games. Isabella van Elferen’s “ALI” (affect – literacy – interaction) model
conjoins interaction with immersion in a more general way, as a specific and separate mode of
immersion.12

Much of the established nomenclature in videogame criticism is derivative of its older cousin,
film music. The categories of “diegetic” and “non-diegetic” music, for example, although not
exclusive to film music, have been lifted from its particular formulations.13 For many, this has proved
largely unproblematic but it should be noted that while this was perhaps necessary to help establish
the new field, too often the uniqueness of videogames has been underplayed. In recent years,
however, much progress has been made toward establishing videogame-specific theory and
terminology. This is evidenced by the growth of quality and diversity across game studies and, more
specifically, the recent development of Ludomusicology as a discipline. This work has helped to refine
concepts of diegesis beyond simple binary categories—useful though they can be—towards more
fluid and complex models more appropriate to the medium.14

Videogames, then, somehow involve the various critical elements described above. These
elements converge on a single distinguishing feature—interactivity—that points beyond the sphere
of videogame studies. While interactivity can be viewed simply as a function of the videogame
aesthetic, it is also relevant to a reconsideration of the cultural status of videogames as both a form

12 Isabella van Elferen, ‘Keynote address,’ at Ludomusicology: Videogame Music Research—Aesthetics and
Approaches (Conference Paper, University of Oxford, April 2012).
13 A helpful summary of the extensive literature on this topic can be found in Ben Winters, ‘The non-
14 On diegesis and videogame music, see Zach Whalen, ‘Play Along - An Approach to Videogame Music,’ Game
18/07/2013; Kristine Jørgensen, ‘On transdiegetic sounds in computer games,’ Northern Lights: Film & Media
Diegetic Sounds in Computer Games Revisited,’ in Game Sound Technology and Player Interaction: Concepts
and Developments, ed. Mark Grimshaw (Hershey, PA: Information Science Reference, 2011), pp. 78–97; Isabella
van Elferen, ‘¡Un forastero! Issues of virtuality and diegesis in videogame music,’ Music and The Moving Image
of mass entertainment and an art form, though these are not mutually exclusive categories. In this broader context, it is worth noting that interactivity itself can also be thought of as a challenge to linearity.

**Crysis points: Historical and Philosophical Contexts of Mobile Form**

In ‘Losing Control: Indeterminacy and Improvisation in Music Since 1950’, Sabine Feisst aims to delineate the various terms of twentieth-century “improvisatory” methodologies, and although this is not a sufficiently critical engagement with the issues (nor rich in analytical detail) it does provide a useful overview by highlighting the range of terminology used and offering references to foundational literature.\(^{15}\) Three terms in particular are relevant here:

- **Indeterminacy**: Predominantly American, pioneered by John Cage: ‘Bringing about indeterminacy is bringing about a situation in which things would happen that are not under my control. Chance operations can guide me to a specific result, like the *Music of Changes*.’\(^{16}\) The final product itself can be “determined” or fixed.
- **Aleatory**: A Eurocentric development closely related to but distinct from indeterminacy, pioneered by Pierre Boulez and Witold Lutoslawski. Employs chance or limited chance procedures and performance flexibility.
- **(Open/closed) mobile form**: Initially employed by Karlheinz Stockhausen, Charles Ives and Terry Riley, amongst others. Earle Brown clarified that open form was distinct from aleatory/indeterminate chance music: ‘I don’t use chance! Do you think Indian music is chance-music? Do you think jazz is chance-music? […] When you conduct my open-form pieces, you are not doing it by chance. You’re doing it because you want the next thing to happen. Because you think it’s right. And that’s what an improviser does. It’s what a composer does who writes closed-form music: but he does it in his room upstairs, rather than doing it on stage… There’s a huge difference between improvisation (spontaneous decisions) and chance. Chance really has to be an exterior, objective thing.’\(^{17}\)

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These important distinctions nevertheless fail to eliminate all ambiguity because there was never any terminological consensus from the outset—different composers (and commentators) employed different nomenclature, some loosely, and some precisely. Regardless, these discrepancies must be placed in a wider theoretical and historical context in order to see the thread of non-linearity that emerges. As Feisst’s title suggests, despite the differences between these various procedures, they were all developed in contradistinction both to previously accepted modernist technical procedures and, on a broader playing field, to Western Enlightenment traditions. In other words, collectively they can be defined through their alterity to the mainstream objectifying tenet of modernism—the “automatisms” of “totalism”—as well as their challenge to the primacy of reason and modes of temporality dominant in Enlightenment thinking. For the purposes of this project then, these definitions of non-linear strategies serve as just one side of the coin.

After Adorno’s binary opposition of Schoenberg and Stravinsky in the early-middle modernist period, some musicologists began to look for the next paradigmatic dichotomy. By 1976, Frank Hoogerwerf believed that contemporary composition lay on a dialectical continuum with total serialism and aleatorism forming the aesthetic antipodes. Acknowledging the ambiguity of the latter term (especially when compared with the former), Hoogerwerf did not categorically distinguish between aleatoric chance performance and indeterminate random compositional processes (neither has there been a systematic approach to the distinction between choice and chance.) Certainly, a broader, inclusive sense of the term is useful but, critically, it also makes no distinction between form and soundworld (the arrangements of pitch and phrases). Just like tonal/harmonic schemes, aleatoric procedures can also be applied (exclusively) to structure (open mobile forms for instance) and/or

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soundworlds. Therefore, a quasi-sonata structure (even as a tonal archetype) could frame an
aleatoric soundworld, or vice versa, a mobile form could encase a functional harmonic soundworld.

*Crysis* is a mixture of these approaches. Hoogerwerf contends that ‘the basic tenet of aleatory
music... is a purposeful denial of all elements of controlled self-expression on the part of the
composer’. This “definition” is a severely limited overview of aleatoric aesthetics in that it appears
to exclude poly-aesthetic approaches to form and soundworlds in principle. Indeed, denying that
non-linear adaptive music (employed in any medium, notably including videogames) is an
indeterminate approach to form is, at best, pedantic.

Many subsequent writers have maintained the original ambiguity of terminology as well as
Hoogerwerf’s utopian drive for clear theoretical dichotomies. Hoogerwerf polarizes what is a simple
technical concept: chance, indeterminacy and aleatoric music could be said to lead towards, or imply
Hoogerwerf’s definition, but the clearly related development of “mobile form” offers alternative
possibilities. Such approaches were not only developed to allow a modernistic “freedom” from man’s
social and cultural controls (‘For Cage, sounds must free themselves from technical shelter and
artificial control, and must display themselves as they actually exist’—rhetoric uncannily
reminiscent of Schoenberg’s Expressionist “inner-necessity”) but also as a means to explore
alternatives to linear structures. The mobile forms in pieces such as Riley’s *In C* (and here, the title
provides a clue) could be described as closer to Mozart’s *Musikalisches Würfelspiel* (dice music) than
Hoogerwerf’s aleatorism, especially when limiting discussion to form (see Chapter 2). Linear

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20 Hoogerwerf, ‘Cage Contra Stravinsky,’ 239, my emphasis.
21 Hoogerwerf, ‘Cage Contra Stravinsky,’ 244.
22 Riley’s *In C* consists of 53 ‘melodic patterns’ to be played in sequence, with the performer free to repeat each
pattern as many times as they choose. The piece is tonal, as indicated by its title. Mozart’s *Musikalisches
Würfelspiel* is structured in a similar way, although the order of the bars is determined by a game of dice and
they are not repeated. However, there is a critical difference as Mozart’s game was conceived of and
advertised as a template for amateurs to construct their own compositions—it was not a mobile work in its
own right.
harmonic progressions in jazz improvisation also have an indeterminate form but depend upon tonal functionality to be communicative and expressive.

The implications offered by a structure like *Crysis* at once become clearer and more complex. Table 1.1 shows that the structural layers of the game employ different formal principles and approaches to time. This poly-aesthetic approach could be viewed as an (unwitting) compromise—the accidental result of competitive market requirements. However, when considered in the context of larger historical narratives such as Karol Berger’s overview of the changing conceptions of time in *Bach’s Cycle, Mozart’s Arrow* (see Chapter 3), it could be viewed as a prime example of a precarious postmodern dialectic. Jonathan Kramer’s seventh facet of “postmodern music”—now over two decades old—after all, ‘avoids totalizing forms (e.g., does not want entire pieces to be tonal or serial or cast in a prescribed formal mold [sic])’.24 For both theorists and practitioners, the tendency towards utopian strategies with clear objective definitions and simple binary oppositions is tenacious, despite increasingly ferocious attacks over the last thirty years.25 Yet reality is rarely so categorically defined.

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<td>Cutscenes, Themes (leitmotifs)</td>
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<td><strong>Middle-ground:</strong></td>
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<td><strong>Foreground:</strong></td>
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Table 1.1: Structural Layers of *Crysis*

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25 Richard Taruskin’s collection of essays, *The Danger of Music and Other Anti-Utopian Essays* (Berkeley: University of California Press, 2009), serves as a timely reminder of the difficulty of letting go of these modernist traits.
Analysis: Part 1—Playing with Form

I will start my analysis by noting the role of the composer within the creative team and, drawing evidence from various interviews, I will evaluate their combined aims and claims. This will be followed by an analysis of the narrative structure, which will be expanded to consider how the musical macro-structure reflects the aims. I will then conduct two close investigations. The first will relate the implementation of musical materials in the game engine to functional mobility, and the second will relate harmonic and topical analysis to functional linearity.

Aims

The role of the composer is even less dominant within the videogame industry than it is in film production, but like film, the composer is seen as just one part of a sub-team that includes audio engineers, programmers, orchestrators and performers. Even the critical responsibility of deploying cues in the game is ordinarily beyond the direct control of the composer. In view of this, the most appropriate hermeneutic approach may be to focus on the audience’s experience rather than the ‘work object’ and issues of intentionality. Nevertheless, composer Inon Zur was not divorced from the rest of the creative team, and took plenty of time to familiarize himself with the game and the developer’s goals: ‘The entire project took about a year from start to finish, but the bulk of the work took about 5 months. Once I learned more and more about the game during those months I was able to come up with more ideas of how to enhance the different situations. Like with many games, the composer needs to get to know the project in detail during which time it often evolves during the process.’\(^{26}\) The degree of collaboration in large productions like Crysis is therefore very high:

We discussed the music system prior to the actual composing stage, so when I started to engage myself in the composing process I already had a clear idea of how the music system would work. This helped me a lot to make artistic choices based on the given music system. I think that this is a great way to work, and only this kind of close collaboration can bring great results when it comes to interactivity in music for video games. This is the future of how we will work in game music.  

Clearly from this positive experience (at least publically) Zur does not lament a lack of artistic control in comparison to opera, or even film. Rather, as Boulez might once have argued, the structure and apparent constrictions promote greater creativity. Speaking more generally, Zur says it is both easier and harder to be given musical restrictions: ‘When you are being restricted to a certain style and sometimes even thematic materials, it is narrowing the array of musical choices, but by that it is also simplifying your job in a way...’  

Zur was provided with the main sound effects for various cutscenes so he could experiment to find which musical ideas worked best. The Northwest Sinfonia orchestra recorded in Seattle with Zur conducting (December 2006), and the live music was then mixed with the synthesized sounds, all before the final mixes with the rest of the audio effects being adjusted and implemented by the rest of the team. The music was, from conception to completion, always just one part of the auditory channel. Zur explains how the implementation of the music for Crysis pioneered new techniques and structures:

Usually when we’re trying to do interactive scores, we are doing either variations of the same cue, and instead of looping the cue, just transitioning between cue to the same cue but in a variation... Or we do stems, so we take the full mix of the cue and then we play only the strings, only brass, only percussion—just to make things more interesting.

In Crysis we did three (sometimes even four) levels of intensity of the cue, but it’s still the same cue—that’s the beauty of it... So imagine to yourself a 1.5-minute cue of music that is around the key of A minor, and it’s around 120 BPM. And it has three major parts in it, but when it plays stripped down, it sounds very slow, ominous, almost ambient. Then the second intensity: there are some percussions being added to the same one, but it stays the same tempo, you just play double time—some string lines, some brass lines... And in the third intensity: everything is in double time,

27 Zur in Larson, ‘A Crysis on His Hands.’
28 Zur in Larson, ‘A Crysis on His Hands.’
sometimes even triple time, but it’s again the same tempo. What you get, you get the very same cue."\(^{29}\)

Elsewhere he clarifies:

The music system is designed to support dramatic changes in the story and to follow closely what is happening literally second-by-second. This is made possible by a new sophisticated music engine, which is choosing the cue based on the dramatic development almost instantly. Each cue has three variations—ambient, medium intensity, and full-on battle. The cues are basically the same when it comes to tempo, structure or keys, but the elements are changing. This allows the system to cross-fade between the variations seamlessly based on the given action, and overall it feels almost like a movie score because of how close the music follows the dramatic events.\(^{30}\)

An analysis of the implementation of the music is therefore paramount for an understanding of its structure. Zur also describes the desired effect:

Let’s say we have contact with the enemy—either alien or Korean in the beginning—we’re just playing sort of ominous level one. Then at some point it will transition to two, but it could transition at any given point because it uses the same cue. Even though the transitions are totally seamless, sometimes they are hidden behind some kind of explosion, scream, or any kind of sound effect. You feel like you’re really in a movie.\(^{31}\)

In other words, the aim is to implement a mobile structure in such a way that provides a linear musical experience that is tailored specifically to the visual drama, and which is favourably comparable to film music.\(^{32}\)

**Narrative Structure**

In several interviews, Zur described the creative process for *Crysis* as a relatively simple evolution of thematic material scored for orchestral, electronic and ethnic elements in order to reflect the story

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\(^{30}\) Zur in Larson, ‘A *Crysis* on His Hands.’

\(^{31}\) Zur in Zelfdan, ‘In the *Crysis* Zone.’

and environments: ‘I had to think about ways to portray the huge difference between all the entities in the game... The outcome of it is a vast style because it has lots of elements like straight score elements, some Eastern elements and some weird effects that have to do with the aliens.’\(^{33}\) Zur explains that there is a close relationship between the musical process and the visual mode of communication, as he conceives both as narrative modes: ‘it always starts and ends with a good story. When the story is not working the technique can’t fix it. But when the story is good, then great creative ideas and technical assets like putting the audio to work can just bring it to life in a big way.’\(^{34}\) Indeed, as the Audio Director, Joseph Zajonc put it, ‘Inon’s sense of orchestration and the sound palette he has developed for this title are integral to the feel and identity of *Crysis*.’\(^{35}\) (It is worth noting at this point that, as an industry norm, it was an in-house professional who did the orchestration, in this case Paul Taylor.)

*Crysis* commences in a very familiar world. The player’s name is Nomad, reflecting the literal and metaphorical journey on which he or she is about to embark. Nomad appears to be the youngest or least experienced of Delta Squad—five elite US commandos equipped with next-generation technology. The introductory levels allow players to familiarize themselves not only with Nomad’s world but, from a pragmatic perspective, the controls for the weapon and “nano-suit” (high-tech armour that allows either bullet-proof protection, superb strength, immense speed, or temporary cloaking). The squad therefore has a decisive edge over the Korean army, who have illegally occupied the island on which the game is set. The game is organized into eleven chapters, each with a dramatic title and separate level for the game engine to load. Each of these levels can be opened in the Sandbox 2 Editor (hereafter SB2).

\(^{33}\) Zur in Zelfdan, ‘In the *Crysis* Zone.’
\(^{34}\) Zur in Larson, ‘A *Crysis* on His Hands.’
The narrative structure of these chapters could be classified as shown in Figure 1.1, some with abundantly clear narrative functions, and others more difficult to categorize. An alternative but similar scheme could interpret the whole as a binary structure, with ‘Core’ at the centre functioning as an otherworldly reintroduction to the following chapters, which form a parallel universe to the first half of the game. Through the zero gravity experience and close encounters with extra-terrestrial life forms in the Core, the character’s perspective on their entire world changes: nothing could ever be the same again for Nomad. Instead of fighting the Korean “other”, Nomad may well feel that humanity is united against a common foe. Indeed, from the Korean perspective, Delta squad in their advanced nano-suits function as their alien other. Zur’s creative process identifies these three distinctive entities, as if the Korean army is as different to the American forces as the aliens are. The music therefore reflects the dramatic structure more than the narrative. This observation also limits the usefulness of the tempting analogy between Figure 1.1 and a sonata form archetype, though sonata form has also been described in a similar way to the flow-charts used in games (see below).36

1. Contact (island.cry)
2. Recovery (village.cry)
3. Relic (resue.cry)
4. Assault (harbour.cry)
5. Onslaught (tank.cry)
6. Awakening (mine.cry)
7. Core (core.cry)
8. Paradise Lost (ice.cry)
9. Exodus (sphere.cry)
10. Ascension (ascension.cry)
11. Reckoning (fleet.cry)


Introduction
Development
Centre
Development
Transitions
Final

Figure 1.1: The Narrative Structure of Crysis

The opening level commences conventionally with a sequence of cutscenes giving the backdrop to the story. (Although the main musical themes are already familiar at this time due to the

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menu screens, they do not form part of the *Crysis* narrative and shall be disregarded here.) The player can control the camera, viewing the world through Nomad’s eyes as he gets a mission briefing from his squad leader, Prophet, before jumping from an aeroplane. A temporary nano-suit malfunction separates Nomad from his squad, and he is soon warned by Prophet that enemy patrols are just ahead. At this early stage in the game, the narrative is directed comparatively strictly, and the player has little opportunity to explore significant non-linear structural elements. In fact, and this is fundamental, the elements of non-linear choice in the game are themselves not structurally significant. The player will follow the overriding narrative, which is the principal governor of the structural order of musical themes. This frames player choices (such as those in the experiment in Part 2c) and limits their musical influence within the mobile form layer.

The music of *Crysis* is neatly structured into “themes”, each with a set of “moods”. Appendix A shows a complete list of the themes (excluding special cutscene cues) employed in each level. (Multiple theme selectors are often used to select a theme more than once during a level for different dramatic moments. This shows the extent to which musical resources are recycled, but has been ignored in the table.) Each mood is organized into “pattern sets”, which, in turn, are arranged in “layers”. Finally, each layer contains any number of “patterns” (cues). Appendix B shows this breakdown for the first level of the game, ‘Contact’. Clearly, CryEngine 2’s music engine can accommodate large and flexible structures. However, closer investigation of the implementation shows that many of the actual cues are recycled between themes. The difference between potential and realization is a critical one, also reflected by the discrepancies between the composer’s intentions and sound engineer’s implementation.\(^{37}\) The overall musical structure can therefore be expressed as in Figure 1.2, although, for readability, only the first two moods of the first theme in the first level have been expanded.

\(^{37}\) There have been cases where the subtle compositional efforts of the composer for a particular cutscene cue were scuppered because the engineer also included the cue in a collection of music to be played randomly throughout the game.
Figure 1.2 shows two important things. First, the purple columns indicate linear structures and the orange columns indicate elements that can be mobile. The levels can only be experienced in the predetermined linear order, and the musical cues themselves are fixed audio files. The order in which themes, moods and layers are chosen sometimes depends on the dramatic status of the game. This status is contingent on plot, player choices, and random elements. Occasionally, these elements are fixed and scripted, simply functioning as a filing system for the cues (none of the structural elements in the game engine are exclusively mobile for this reason). Secondly, the boxes under levels, themes, moods and layers are all colour-coded to reflect density—the darker the box, the more items it contains (see the number in brackets). (In the case of moods, the density is the number of cues in the mood, not the number of layers.) From this we can make two very general observations: the music’s structural variety decreases significantly in the second half of the game once the new alien music is introduced but increases exponentially in the finale (‘Reckoning’) as the dramatic tempo increases towards its apotheosis; and, in contrast to this, in order to reduce predictability in slow or quiet dramatic scenarios, stingers and incidentals require more cues even though most will be unheard in each play-through. The difference between the density of the “action” and “middle” moods compared to the “incidental” and “ambient” (and “silence”) is a clear indication of this.
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**Figure 1.2: The Musical Structure of Crysis**
Implementation and Functional Mobility

SB2 allows programmers to script logic flow graphs (hereafter FG) that control non-default behaviour for everything from the artificial intelligence (hereafter AI), mission goals, cutscenes, and the music. The FGs are an infinite sheet of virtual graph paper on which various entities are placed and linked. Each entity has certain parameters and input/output ports that control the flow of information.

Figure 1.3: “First Sighting” (island.cry FG hilltop_meeting)
Figure 1.3 shows an excerpt from the FG “hilltop_meeting” in which the player first encounters the Koreans after landing at a nearby beach. When the player enters the area trigger “Shoot”, “MusicPlayPattern_first_contact” is played. Once the first enemy soldier (grunt 1st_Encounter_1) is dead, ‘MusicPlayPattern_theme_1 is played. Below this is the first example of some more complex game logic: if both “grunts”38 (‘2nd_Encounter_1’ and ‘2nd_Encounter_2’) are dead or the player enters the area trigger “Aztec_reports_in” then two time delays are set. After 2 seconds, “MusicPlayPattern_theme_2” is played, then after a further eight seconds, the area trigger “3rd_incidental” is enabled. Once this area is entered, “MusicPlayPattern_theme_3” is played.

Figure 1.4 shows the beach where the player first encounters the enemy. The two blue men icons near the cliff are the spawn points for the “grunts” (guards referred to as “2nd_Encounter_1” and “2nd_Encounter_2”), and the two orange lines forming a chevron across the middle of the screen

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38 The term is taken directly from the flow graphs, and is a common signifier for enemy soldiers in videogames.
show the area trigger “Aztec_reports_in”, through which the player must pass to continue. A clearer picture of the teleological linear framework encompassing elements of interactivity (closed mobile form) is hard to imagine. The FG is designed to accommodate any playing scenario: the player will most likely kill the enemies and move along the beach through the trigger, but if they choose not to, they can also be stealthy and swim around unnoticed. Either way, the trigger is activated and the music and narrative still function as planned. The music is determined in an interactive but linear mode: exactly when the music will play is not specified, only the order based on how the player interacts with the environment. This music therefore functions in much the same way as operatic or film music, with the conductor waiting for a script cue to bring in the orchestra.

Figure 1.5 shows the next significant excerpt from the “hilltop_meeting” FG which introduces further complexities. First, once the two patrol grunts are dead, a “MusicMoodSelector” entity is employed to set the mood to “incidental” music. The “MusicPlayPattern_sunrise” entity plays the pattern “meeting_barnes_hilltop” (theme: “island_meeting_barnes”, mood: “hilltop_meeting”) at a very memorable sunrise vista, and thirty seconds later, as Crytek’s FG comment puts it, the ‘first big battle music’ commences. The “travel” theme is selected and the MusicLogic is started. If the AI soldiers of groupID 1010 are alerted to Nomad’s presence (which can only happen once), the value 250 is added to the AI-Intensity parameter of the “MusicLogicControl” entity. This addition ensures a specific event has a particularly marked effect on the otherwise automatic adjustments the “MusicLogicControl” makes within a given theme. This entity is the principal exemplification of functional mobility through which the mobile form of the theme is converted into a linear experience contingent on the dramatic action. This action in turn is based on player choice, and on both random and scripted events.
Figure 1.5: “First Light” (island.cry FG hilltop_meeting)
Where Layers contain multiple cues, the “MusicLogicControl” plays one at random to avoid monotony. In the case of “First Light”, the FG ensures that there is a significant musical difference depending on whether the player decides to be stealthy or take on the guards “all guns blazing”. In either case, the “MusicLogicControl” will start with cues from the “Incidental Mood”, and as the action changes it will fade (blend) into cues from the other moods. In SB2’s database, under “Pattern Properties” for the cue “travel_incidental_02” (theme: travel, mood: incidental, layer: incidental), fade points have been marked at 88000, 176000, 264000 and 352000. These are the specified times in this particular cue that are customized for an effective transition into another cue from the same theme. Blends can be different speeds, depending on the action, and are usually masked by other sound effects. As we shall see below, the thread of harmonic continuity across entire themes permits coherent transitions. Unfortunately, Crytek provide little documentation on the “MusicLogicControl” entity, so to work out exactly how it links music to action it is necessary to hear (and view) it in action.
Analysis: Part 2—Playing with Meaning

An Experiment: Linear Experiences of Mobile Functionality

SB2 can show exactly what sounds are playing as the game is tested. Tables 1.2 and 1.3 show the music that was selected during two play-throughs of “First Light”, both lasting about 3.16 minutes. Similar tactics were employed in both examples but significant differences are noted under “Commentary”. These tables demonstrate that, somewhat paradoxically, more complex musical choices are actually often made when the pace of change in dramatic action is comparatively slow.

The first minute of “Play-through 1” shows that when the player holds back and gradually increases the level of action from afar, the “MusicLogicControl” introduces different layers (stingers and incidentals) to keep the music interesting whilst maintaining the overriding moods. In “Play-through 2” this is unnecessary, as the main layer containing the more substantial cues for each mood suits the more stable and sustained action. In both examples, the “action” mood is only reached once there is a sufficient level of combat and remains active only briefly. The reason the mood is not activated sooner and more easily by player action, may be to prevent musical and dramatic fatigue. Plenty of shooting and similar action earlier on does not necessarily warrant this dramatic level of musical support—especially in a “first-person shooter” (FPS) genre bound to be full of such content—and the more tense “middle” mood cues are actually more suitable. The FG scripted addition of intensity (discussed above) is clearly active in “Play-through 1” and pushes the mood up to “action”, whereas in “Play-through 2” the intensity was already too low for it to make a significant difference.

These moments (highlighted in the tables) are highly effective dramatically—in the first case, the level of combative action warrants an additional level of musical underscoring, with the player deliberately taking an ‘all guns blazing’ approach, while in the second case, the player continued to adopt slower, more stealthy tactics, and the close-encounter was a dramatic but localized event. The “MusicLogicControl” is quick to respond to the action, as demonstrated when, in “Play-through 1”,

55
the music has just begun a transition from the “action” to “middle” mood when the player kills the last guard in the area. Immediately both “action” and “middle” are blended out to be replaced by “ambient”.

<table>
<thead>
<tr>
<th>Time (mm:ss)</th>
<th>Theme</th>
<th>Mood</th>
<th>Layer</th>
<th>Pattern</th>
<th>Blend</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:06</td>
<td>travel</td>
<td>incidental</td>
<td>main</td>
<td>meeting_barnes_hilltop</td>
<td>Vista into view</td>
<td></td>
</tr>
<tr>
<td>00:36</td>
<td>travel</td>
<td>incidental</td>
<td>main</td>
<td>travel_silence_incidental</td>
<td>Spying with binoculars</td>
<td></td>
</tr>
<tr>
<td>00:38</td>
<td>travel</td>
<td>ambient</td>
<td>main</td>
<td>travel_1_main</td>
<td>in</td>
<td>travel_silence_incidental</td>
</tr>
<tr>
<td>00:42</td>
<td>travel</td>
<td>ambient</td>
<td>main</td>
<td>travel_1_main</td>
<td>out</td>
<td>meeting_barnes_hilltop</td>
</tr>
<tr>
<td>00:45</td>
<td>travel</td>
<td>ambient</td>
<td>main</td>
<td>travel_1_main</td>
<td>meeting_barnes_hilltop</td>
<td></td>
</tr>
<tr>
<td>00:57</td>
<td>travel</td>
<td>silence</td>
<td>main</td>
<td>travel_silence</td>
<td>out</td>
<td>Stealth on</td>
</tr>
<tr>
<td>01:02</td>
<td>travel</td>
<td>silence</td>
<td>main</td>
<td>travel_silence</td>
<td>travel_1_main</td>
<td>Stealth off</td>
</tr>
<tr>
<td>01:11</td>
<td>travel</td>
<td>ambient</td>
<td>main</td>
<td>travel_1_main</td>
<td>travel_silence</td>
<td></td>
</tr>
<tr>
<td>01:30</td>
<td>travel</td>
<td>middle</td>
<td>main</td>
<td>travel_2_main</td>
<td>in</td>
<td>travel_1_main</td>
</tr>
<tr>
<td>01:34</td>
<td>travel</td>
<td>middle</td>
<td>main</td>
<td>travel_2_main</td>
<td>out</td>
<td>travel_1_main</td>
</tr>
<tr>
<td>02:39</td>
<td>travel</td>
<td>action</td>
<td>main</td>
<td>travel_3_main</td>
<td>in</td>
<td>travel_2_main</td>
</tr>
<tr>
<td>02:46</td>
<td>travel</td>
<td>action</td>
<td>main</td>
<td>travel_3_main</td>
<td>out</td>
<td>travel_2_main</td>
</tr>
<tr>
<td>02:49</td>
<td>travel</td>
<td>ambient</td>
<td>main</td>
<td>travel_1_main</td>
<td>in</td>
<td>travel_2_main</td>
</tr>
<tr>
<td>02:52–03:16</td>
<td>travel</td>
<td>ambient</td>
<td>main</td>
<td>travel_1_main</td>
<td>out</td>
<td>travel_2_main</td>
</tr>
</tbody>
</table>

Table 1.2: “First Light” Play-through 1
<table>
<thead>
<tr>
<th>Time (mm:ss)</th>
<th>Theme</th>
<th>Mood</th>
<th>Layer</th>
<th>Pattern</th>
<th>Blend</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:11</td>
<td>travel</td>
<td>incidental</td>
<td>main</td>
<td>travel_silence_incidental</td>
<td>meeting_barnes_hilltop</td>
<td>Vista into view</td>
</tr>
<tr>
<td>00:41</td>
<td>travel</td>
<td>incidental</td>
<td>main</td>
<td>travel_silence_incidental</td>
<td>meeting_barnes_hilltop</td>
<td>Spying with binoculars</td>
</tr>
<tr>
<td>00:43</td>
<td>travel</td>
<td>incidental</td>
<td>main</td>
<td>travel_silence_incidental</td>
<td>travel_incidental_stinger2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>travel</td>
<td>incidental</td>
<td>stinger</td>
<td>travel_incidental_stinger2</td>
<td>meeting_barnes_hilltop</td>
<td></td>
</tr>
<tr>
<td>00:435</td>
<td>travel</td>
<td>ambient</td>
<td>main</td>
<td>travel_1_main</td>
<td>in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>travel</td>
<td>incidental</td>
<td>main</td>
<td>travel_silence_incidental</td>
<td>out</td>
<td></td>
</tr>
<tr>
<td></td>
<td>travel</td>
<td>incidental</td>
<td>stinger</td>
<td>travel_incidental_stinger2</td>
<td>meeting_barnes_hilltop</td>
<td></td>
</tr>
<tr>
<td>00:49</td>
<td>travel</td>
<td>ambient</td>
<td>main</td>
<td>travel_1_main</td>
<td>travel_incidental_stinger2</td>
<td></td>
</tr>
<tr>
<td>00:51</td>
<td>travel</td>
<td>ambient</td>
<td>main</td>
<td>travel_1_main</td>
<td>Player holding back</td>
<td></td>
</tr>
<tr>
<td>01:01</td>
<td>travel</td>
<td>ambient</td>
<td>incidental</td>
<td>travel_1_inc2</td>
<td>travel_1_main</td>
<td></td>
</tr>
<tr>
<td>01:04</td>
<td>travel</td>
<td>ambient</td>
<td>incidental</td>
<td>travel_1_inc2</td>
<td>travel_silence</td>
<td>out</td>
</tr>
<tr>
<td></td>
<td>travel</td>
<td>silence</td>
<td>main</td>
<td>travel_1_main</td>
<td>travel_silence</td>
<td>out</td>
</tr>
<tr>
<td></td>
<td>travel</td>
<td>ambient</td>
<td>Main</td>
<td>travel_1_main</td>
<td>Shooting with silencer from distance</td>
<td></td>
</tr>
<tr>
<td>01:07</td>
<td>travel</td>
<td>silence</td>
<td>Main</td>
<td>travel_silence</td>
<td>travel_1_main</td>
<td>out</td>
</tr>
<tr>
<td>01:10</td>
<td>travel</td>
<td>silence</td>
<td>Main</td>
<td>travel_silence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>01:14</td>
<td>travel</td>
<td>silence</td>
<td>Main</td>
<td>travel_silence</td>
<td>in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>travel</td>
<td>silence</td>
<td>Main</td>
<td>travel_silence</td>
<td>out</td>
<td></td>
</tr>
<tr>
<td>01:18</td>
<td>travel</td>
<td>ambient</td>
<td>Main</td>
<td>travel_1_main</td>
<td>Guards alert:</td>
<td>reinforcements called</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>travel_1_main</td>
<td></td>
</tr>
<tr>
<td>01:33</td>
<td>travel</td>
<td>ambient</td>
<td>incidental</td>
<td>travel_1_inc3</td>
<td>travel_1_main</td>
<td></td>
</tr>
<tr>
<td>01:41</td>
<td>travel</td>
<td>ambient</td>
<td>Main</td>
<td>travel_2_main</td>
<td>in</td>
<td>Close encounter with guard on path</td>
</tr>
<tr>
<td></td>
<td>travel</td>
<td>middle</td>
<td>Main</td>
<td>travel_2_main</td>
<td>out</td>
<td></td>
</tr>
<tr>
<td></td>
<td>travel</td>
<td>ambient</td>
<td>Main</td>
<td>travel_1_main</td>
<td>in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>travel</td>
<td>ambient</td>
<td>Main</td>
<td>travel_1_main</td>
<td>out</td>
<td></td>
</tr>
<tr>
<td>01:45</td>
<td>travel</td>
<td>middle</td>
<td>Main</td>
<td>travel_2_main</td>
<td>Still fighting guard on path</td>
<td></td>
</tr>
<tr>
<td>02:21</td>
<td>travel</td>
<td>action</td>
<td>Main</td>
<td>travel_3_main</td>
<td>in</td>
<td>Full combat</td>
</tr>
<tr>
<td></td>
<td>travel</td>
<td>middle</td>
<td>Main</td>
<td>travel_2_main</td>
<td>out</td>
<td></td>
</tr>
<tr>
<td>02:27</td>
<td>travel</td>
<td>action</td>
<td>Main</td>
<td>travel_3_main</td>
<td></td>
<td></td>
</tr>
<tr>
<td>02:39</td>
<td>travel</td>
<td>action</td>
<td>Main</td>
<td>travel_3_main</td>
<td>in</td>
<td>Last guard killed</td>
</tr>
<tr>
<td></td>
<td>travel</td>
<td>ambient</td>
<td>Main</td>
<td>travel_1_main</td>
<td>out</td>
<td></td>
</tr>
<tr>
<td></td>
<td>travel</td>
<td>action</td>
<td>Main</td>
<td>travel_3_main</td>
<td>in</td>
<td></td>
</tr>
<tr>
<td>02:45–03:17</td>
<td>travel</td>
<td>ambient</td>
<td>Main</td>
<td>travel_1_main</td>
<td>Shooting at boat</td>
<td></td>
</tr>
</tbody>
</table>

Table 1.3: “First Light” Play-through 2
As a linear experience, the success of the “MusicLogicControl” is principally determined on the speed and nature of the blends. In Axel Berndt & Holger Theisel’s proposal for an adaptive system of real-time orchestration and performance, they also note latency is a critical factor in determining the most effective transitions.39 Although Crytek have achieved an excellent response time to the various dramatic parameters, the fact that it is a response guarantees that the music can only ever be one step behind. Usually this does not matter in games with content limited to simple action and entertainment, but it does indicate that there is a significant limitation on the dramatic effectiveness of these mobile forms. However, adaptive compositional systems such as the aforementioned proposal are in their infancy and significant improvements can be expected over the coming decade. In any case, most contemporary games employ cutscenes for dramatic moments that require more careful crafting.

Topical Analyses and Functional Linearity

Inon Zur’s soundworld for Crysis is, predictably, a tonal one. (The “alien” music that appears halfway through the game is actually also tonal, a cross between Stravinsky, Piazzolla and Bernard Herrmann that is now something of a cliché.) Tonality, traditionally conceived, requires a degree of linear progression in order to function, but this need only happen at the phrase or cue-level of the structure. Much cognitive research has been devoted to the phenomenological question of tonality’s functionality at the macro-level of formal structure.40 Nevertheless, the enculturalization—pace Schenker and his true devotees—of tonal functionality has ensured the power of the experiences it produces, at least on the small–medium scale harmonic level. With reference to topic theory, I will now investigate the ways in which Zur’s cues achieve their dramatic goals.

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1. Analysing *Crysis*  
The Aesthetics of Videogame Music  
Mark Sweeney

**Topic Theory**

Cliché is a valuable tool, as well as a danger to originality in film and videogame music. While on the one hand it is necessary to ensure cues are clearly meaningful, if they sound too familiar, too pastiche or too melodramatic, they can become a distraction. Given the nature of mixing in videogame music, there is a greater degree of flexibility for the composer, as throughout the majority of the game the music functions almost subliminally under a plethora of sound effects and visual splendour: while maintaining effective functionality, a little cliché usually goes unnoticed.

Of course, this technique is not without precedent. The Enlightenment brought about a move from the High Baroque compositional focus on the single “affect” to multiple layers of expressive contrasts. This came with the recognition that an individual’s feelings were in a constant state of flux rather than a succession of distinct temperaments. Musically, this became evident not only in the varied expressive qualities in a single movement, but in the contrasts now drawn between key areas, phrases and even bars. With the rise of Opera Buffa in particular, instrumental music gained a frame of reference from which to build a library of *topoi*—‘subjects for musical discourse’—either in the form of a full composition (“type”) or as a passage or figure within a single work (“style”).

Leonard Ratner and Wye Allanbrook pioneered a systematic approach towards purposeful rhetorical devices in the instrumental music of composers such as Mozart and Haydn. Their keyboard sonata analyses, for instance, demonstrate the interaction of musical processes with expression through the use of contrasting topics. Allanbrook goes as far as suggesting that the development of sonata form was in part ‘a new mode of taking tonality, one that reinforces dramatic continuity while admitting the new delight in topical contrast and counterstatement.’

In defining the essential criteria for each rhetorical element, Ratner demonstrates ‘ways in which the various parts of classic musical discourse could be put together to establish coherence and to promote eloquence’—what Ratner claims is the very essence of the classical style. In rhetorical terms, unity is no longer created by all the musical elements working towards one temperament, as in a mono-affective Baroque instrumental movement; instead, the rhetorical Hauptsatz (the principal idea or theme) is worked through what Einstein referred to as “il filo”—the musical thread of connection and succession. Through her analysis of the first movement of Mozart’s keyboard sonata K. 332, Allanbrook shows that even when Mozart makes a sudden jump to a contrasting topic, unity is maintained through gestural similarities. For instance, the Exposition of K. 332 moves swiftly through several topics: a singing style—a parody of learned counterpoint—a gallant minuet—horn hunting calls—Sturm und Drang (tragic style)—a bright symmetrical minuet. Allanbrook argues that the iambic cadences form the common denominator between the horn calls and Sturm und Drang topics: keeping the iambic rhythm intact allows everything else to change. Ratner concludes ‘Mozart weaves threads of connection that link contrasted sections and figures by single notes, by overlaps in cadential action, by shifts of stance within cadential formulas. He veers again and again at surprising tangents, but always turns upon a point of leverage between the juxtaposed topics.’ In this way, the composer himself plays with meaning, creating a structure for the audience to experience and negotiate.

Furthermore, there is a close relationship between the formal logic of tonal progressions and the use of expressive topoi. The Exposition moves from the tonic (F major) to the dominant via the dominant minor. The succession of topics in this exposition clearly aligns itself with the tonal plan—the C minor passage idiomatically coincides with Sturm und Drang, moving naturally into the major mode and the lighter minuet. Thus different topics, Allanbrook argues, are suited to specific musical

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functions: ‘just as the other gestures are chosen for their appropriateness to the particular moment in the key-area process that they further—the singing and learned styles bound together to create an extended opening period, the horn calls suitable for a codetta—the Sturm und Drang is tailored for modulation’. 45

defining “moods”: exploring the main topical categories employed in crysis

the most commonly employed “moods” in crysis are categorized as ‘action’, ‘ambient’, ‘incidental’, ‘middle’ and ‘silence’. while these moods seem like self-evident topics, an analysis of how they convey these states is fundamental to an understanding of music’s functionality within a videogame narrative. table 1.4 compares the main layers of the travel theme moods, as this layer usually contains the most substantial musical cues.

Travel Theme, Main Layers
Mood (Main Layer Cue) organized by intensity | Description
--- | ---
Silence (travel_silence) ‘music/levels/silence.wav’ | Both of these cues actually play a silent audio track. Their other layers are more significant.
Incidental (travel_silence_incidental) ‘music/levels/silence.wav’ | • music mimicking ambient sound effects, e.g. long held synthesized/string notes/chords with extreme fades and contrasts
Ambient (travel_1_main) ‘music/levels/tank/travel_1_main.wav’ | • light military topic (snare drum rhythms)
 | • Korean/ethnic sporadic drumming
Middle (travel_2_main) ‘music/levels/tank/travel_2_main.wav’ | • musical theme in cellos & basses
 | • more steady musical process: regular rhythmic energy in strings
 | • horn theme
 | • percussion punctuations (military & ethnic topics)
Action (travel_3_main) ‘music/levels/tank/travel_3_main.wav’ | • fuller consistent percussion (merging of topical rhythms)
 | • brass theme with string stab chords accompaniment
 | • lively electric bass
 | • full horn theme grandly over top of lively percussion and strings

Table 1.4: “Travel Theme” Topical Analysis

The first thing to note is that the naming (and numbering) of the cues tells us about their structural relationship: they are organized according to levels of intensity. The principal methods for increasing intensity include amplifying volume, increasing consistency of metre, tempo, and rhythm, and a fuller orchestration. In all these cues, musical phrases are consistently contrasted with moments of comparative silence before being reinvigorated. On the face of it, it would seem that these are the only factors that distinguish the meaning and dramatic function of the cues. This is unsurprising, however, as the content of the game naturally does not require the full breadth of topoi—most, if not all, of the music required is bound to be from the same category. (Furthermore,
the number and variety of cues is misleading, as many are just seconds long and most are variants on the same thematic material.

In any case, Zur does exploit four distinguishable topics prevalent across the entire game: the main theme on the French horns (heroic, epic topic); the military march with heavy percussion; the epic wordless chorus; and the electric bass guitar and synthesizers for the otherworldly alien music. These topical styles are closely associated with the thematic material. The main theme, for example, like the use of leitmotifs in opera and film music, is associated with the French Horn because as Zur explains: ‘[French Horns have] a serious pronouncement quality and depth, but also emotional strength...’ The popularity of this style of orchestral writing—the soundtracks to Star Wars and The Lord of the Rings come to mind—strengthens topical function. This reinforcing of the patterns of associations creates tropes that become the source of meaning in their own right.

The theme is a typically simple motif (Figure 1.8 is its most common form) whose compactness is critical not only for it to be readily recognizable, but also so that it can be easily manipulated throughout the score. As it is an arpeggiation of tonic and dominant chords, its harmonic functionality is straightforward to exploit. Combined with an antecedent–consequent phrase structure, the theme permits a ready and adaptable means of creating and incrementing tension. This is the rhetorical Hauptsatz that unites the entire game musically and all the other music.

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46 Zur in Zelfdan, ‘In the Crysis Zone.’
is at one point or another infused with it. Figure 1.9 is an example of how Zur accomplishes this by turning it into a rising sequence:

Both the pitch structure and rhythmic profile of the theme remain largely intact, although the main melody notes (coloured in orange) rise by step instead of falling as they do in Figure 1.8, and the sequence is also displaced so that emphasis is no longer on the first note. This helps to make this passage more energetic, with greater forward-momentum. The chord symbols are deduced by implication and until bar 8 the harmonies all run over a tonic pedal. For this theme to achieve its dramatic function, its soundworld has to be structured linearly; the order in which tonal harmony progresses matters and it is precisely because of this that it can be exploited to increase dramatic tension. This can be explained in semiotic and phenomenological terms; for instance, Agawu says that ‘As in language, meaning is secured only when the entire [harmonic progression] has passed.’ I will return to semiotics in the following chapter; here, the focus will remain on listener expectations driven by linear tonal harmony. Eugene Narmour’s ‘implication-realisation’ analytical methodology offers a provocative, if flawed, attempt to provide a pseudo-scientific basis for understanding listener expectations.

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analysing crysis

1. Analysing Crysis

The Aesthetics of Videogame Music

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expectations. Narmour developed Leonard Meyer’s earlier efforts by substituting Meyer’s concept of ‘expectancy’ with ‘implication’, the former implying a subject with a single preferred expectation, the latter offering multiple possibilities from an ostensibly objective perspective. Nevertheless, Narmour’s claims of objectivity are still highly suspect, and although this mind-set for analysing implications is useful, it is important to note the limited extent to which his theory is supported by psychological science. The teleological impulse towards bar 8 is generated from the beginning of the passage. The sequence starts by climbing the harmonic scale at a rate of one note per two-bar phrase. Once this is repeated, the rate of change accelerates so that the melody forms an actual scale in bar 7. Harmonically, the oscillation between tonic and dominant is made more potent each phrase with the addition of the seventh, and then the minor ninth. These factors combine to imply an imminent climax or harmonic conclusion, normatively towards the tonic note. However, in the event at bar 8, the implied tonic is avoided, with the preceding C-natural leading instead to a D♭—the leading note respelled. This interruption functions as a substitute plagal cadence (♭VI ≡ iv7) in F minor, and without any tonal resolution, the music continues to push forwards.

Figure 1.10 is a simplified piano reduction of the introduction to the trailer music (which, like a Rossini overture, provides a useful summary of the music across the game), and demonstrates further how linear functional harmony plays with listener expectation. In the 3/2 section (bars 1–8), Zur exploits the features of the theme to steadily build tension towards the final cadence into bar 9. The dynamic markings in conjunction with long static chords clearly emphasize the harmonic

50 Indeed, Narmour’s own Beyond Schenkerism (Chicago: Chicago University Press, 1977) was itself born out of this spirit. Neo-Schenkerians adopted a similar attitude by removing the psychological elements from Schenkerian Analysis, though their association with logical positivism has also been criticized along with proponents of Set Theory. See Cook, A Guide to Musical Analysis, (Oxford: Oxford University Press, 1994), pp. 122–123.
functions, shifting the tension and expectation in the progression onwards. The addition of an extra beat in bar 8 has the effect of a written out *ritenuto*, which emphasizes another substitute plagal function. This VI – i cadence is particularly suited for this moment, as VI shares an additional note with the tonic chord than iv, making it closer to a substitute statement for the tonic: this is a cadence that commences a new section rather than closing with perfect finality.
The march theme (bars 13–17 of Figure 1.10) is an optional counter-subject to the variations of the main theme and the two are often mixed together. The distinction between the style of the
introductory material and the march is held together through *il filo* of the prevailing tonality (D minor), the tonic pedal and the regular harmonic rhythm swinging between tonic and dominant. Similarly, in the game itself, as Zur indicated (above), the cues of various moods in a given theme are in effect variations on the “same cue” in that they have the same harmonic profile and phrase structure.

The other key theme in *Crysis* is the slow whole-tone bass-line descent (Figure 1.11) which arguably originates from the slow chordal style of the opening passage in Figure 1.10. (One could make a motivic connection with the bass-line in bar 5 of the figure, noting too the tendency to retain the tonic note as either a pedal point or shared harmonic note.) In the tonal context, this whole-tone progression is customized to represent the feelings of fear and awe when the player is in confrontation with alien enemies of vast magnitude. (In Figure 1.10, the right hand stab chords of bar 28 are performed by a large wordless chorus, another idiomatic topic akin to John Williams’ ‘Dual of the Fates’ from *Star Wars*, to name a familiar example. This too conveys an epic sense, although with greater urgency.)

These three themes and the topical associations have clear *dramatic* functions, but as Allanbrook and Ratner suggest, some topics are also suited to particular *musical* functions. By musical function, in this context, the implication is of the *position* within a particular structural level: opening, developing, or closing. From Figure 1.10, one could legitimately suggest that the
presentation of the opening theme is suited to the exposition of the principal material due to its introductory declamatory style, whereas the military march is more appropriate as the main body of music. Beyond this, however, it becomes problematic to argue with any degree of exactitude or consistency that the topics or themes lend themselves to particular small-scale musical functions. Indeed, William Caplin has argued that the relationship between *topoi* and formal functions should not be overplayed, precisely because the principal function of these *topoi* is content based.51 Nevertheless, if we take the view that the “moods” themselves function in a similar fashion to musical topics, we can align them to the mobile musical structures previously uncovered (see Tables 1.2 and 1.3).

**Conclusions**

By looking at the structure and implementation of music in *Crysis*, I have shown how the different structural layers function from the top down. Mobile structures, described as a subset of the aleatoric aesthetic, do not necessarily imply aleatoric soundworlds. *Crysis* subverts Hoogerwerf’s perception of aleatoric approaches to form because it combines multiple aesthetics to achieve its musical and dramatic goals: the aesthetic experience includes both mobile form and topical tonal music. While there are problems with implementation, it nevertheless succeeds in demonstrating that this strategy can be an effective and viable one, as it allows the composer (and audio team) to employ appropriate structural systems at different hierarchical layers. Instead of promoting one aesthetic approach above all others, this poly-aesthetic approach employs both where they can be most effective in achieving the dramatic goals required to communicate clearly to the audience.

I have also shown how the concepts of play and form might be readily employed in discussions about videogame music. The listener/player “plays with form” in a tangible way by exploring the formal limits of the open-world environment. In *Crysis*, play is not overtly focussed on the form of the musical content, but music is a significant component of the videogame aesthetic, and playing with the form of the game entails playing with the form of the music. The player also “plays with meaning” by interpreting musical topics as game state indicators, though this is just one way in which the player might engage with meaning. In the case of *Crysis*, playing with form—the aesthetics of the game—and meaning are complementary rather than contradictory or exclusive activities. Methodologically, separating these two facets of aesthetic experience helps to clarify them conceptually. However, in the following chapters this false dichotomy will not be as rigidly demarcated. Indeed, form and meaning are not just closely related; they are both functions of play.