

MASTEROPPGAVE

The Musical Conventions of Star Trek A Search for Musical Syntax in Science Fiction

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The Musical Conventions of Star Trek

A SEARCH FOR MUSICAL SYNTAX IN SCIENCE FICTION

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Abstract

The music of science fiction. Why did it become to sound the way it does and how does the musical mechanisms work? How are space, the extraordinary, the fantastic and the outer-worldly depicted in western science fiction filmography? This thesis takes a historical and analytical perspective as it looks closer on the musical constructions we find in the music of the movies of *Star Trek*. Using conventional music analytical tools combined with *neo-Riemannian theory* (nRT) and *transformational theory* this thesis hopes to shed light on the inner workings in the music of *Jerry Goldsmith*, *James Horner* and *Michael Giacchino* in the iconic films: “Star Trek: The Motion Picture”, “Star Trek: The Wrath of Khan”, “Star Trek: First Contact”, “Star Trek: Nemesis”, “Star Trek” and “Star Trek: Into Darkness”.

Orthography and Examples

Due to the fact that procuring the original scores was beyond my reach, I have chosen to transcribe all of the musical examples provided in this thesis. I have done my utmost to provide as accurate a rendition as possible; however, some things may have been omitted for the sake of clarity or because they simply were not heard. There are a few challenges worth nothing: Octave doublings and woodwinds are especially hard to hear through the thick orchestration. Time signatures and enharmonism will, at all times, reflect the current mood of the author and might differ from the original scores.

Symbol	Translation
C	C major triad
Cm	C minor triad
C^{maj7}	C with added diatonic 7
C^7	C with added flat 7
$C^7(\#5)$	C with added flat 7 and sharp 5
$C^7(\#5)^{\#9}$	C with added flat 7 and sharp 9 and sharp 5
C^{11}	C with added flat 7, 9, 11
C^{13}	C with added flat 7, 9, 11 and 13
$C/B\flat$	C with B \flat in bass
$\frac{C}{D}$	C major over D major
$C_{(a)b/c/d}^7$	(root), first, second, third inversion
$pc [0,2,4,T]$	Absolute pitch: C, D, E, B \flat
$\hat{1}$	Relative to chord
$\boxed{C}:$	The key of C
\int	Substitute symbol: $(\int)m^{7(\flat 5)}$

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Acronyms

nRT *neo-Riemannian theory*

ST:TMP *Star Trek: The Motion Picture*

MTTP *Major Tritone Progression*

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My Aphrodite and muse

My daughter

Tea, Earl Grey, Hot.

1

Introduction

When setting out to write this thesis it was with the purpose to understand modern film scoring. The question I was asking myself was in the lines of: "What is going on with modern film music? This does not sound like it used to!" What I was trying to formulate back then was that I had noticed a change of focus in film music of today, i.e. how composers now choose to "talk" to the audience. My theory was that film music was moving away from the strong concept of melody given to us with *John Williams* and *Star Wars*, to make room for texture: Enormous walls of sound featuring huge orchestras with lots and lots of synths and sound effects. This made me think that perhaps the new *leitmotif* was texture. My wanderings aside however, the scope of a single thesis is not enough to cover such an extensive topic. But, one must start some place and I landed on figuring out how film music has evolved. To further narrow it down I chose to study *science fiction*, specifically the music of *Star Trek*. *Star Trek* is a special case in movie history. It has been running since 1969 in one form or another. The first movie came out in 1979 and the last one in 2013. It is ideal to use as a case tracking its evolution over time. The most available material to conduct research on is the *Star Trek* motion pictures. All of the scores has been released as special edition CD's containing most cues from the motion pictures, making it easy to focus on the music. I will discuss *Star Trek* in depth in chapter 2.

But even so, there are no official scores to procure. I was able to get in touch with people able to help me get a look at the actual scores used during the different recording sessions, but that meant traveling to Hollywood and Paramount studios. By the time I had gotten this information any window to apply for funding was past. Therefore I chose to transcribe the music myself. One challenge of transcribing music this detailed is the amount of time required transcribing the examples. With twelve movies to chose from the question regarding what I was going to focus on arose. *Star Trek*, the movies is divided into three epochs: The Original Series, The Next Generation and the Reboot. I thought it best to choose two movies from each epoch. One composer in the *Star Trek* universe stands out: *Jerry Goldsmith*. He has scored five of the twelve movies during a timespan of 23 year making him part of the quintessential *sound* of *Star Trek*. The choice fell on the two first films, "**The Motion Picture**", by *Goldsmith* and "**The Wrath**

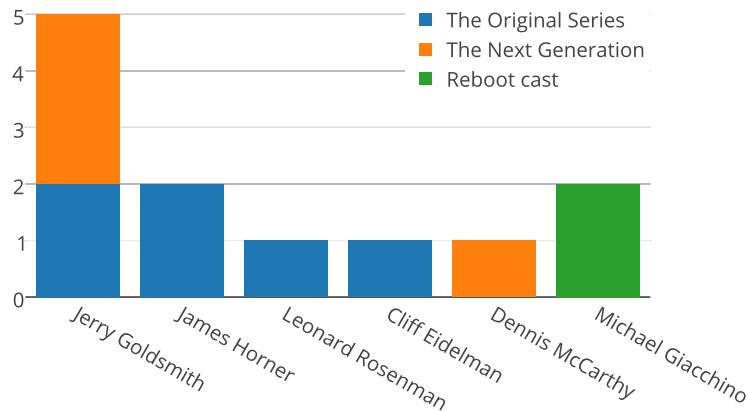


Figure 1.1: Star Trek composers and movies

of Kahn”, by James Horner. Both critically acclaimed for their music. The next obvious candidates was the newest films from the reboot series: “Star Trek” and “Into Darkness” featuring composer Michael Giacchino. What to chose from “The Next Generation” era was harder. I wanted to study how the music has evolved over time therefore looking for some sort of continuity. The choice fell on Goldsmiths scores for “First Contact” and “Nemesis”. I present my analysis in chapter 5 through 10. That being said, the other scores are well worth the attention and should be included in a later research. A table containing the complete list of Star Trek movies can be found on page 27 and the complete list of all composers associated with the Star Trek universe can be found on page 29.

Now my quest was crystalizing, I wanted to study the musical conventions of Star Trek. How to go about it? My formal training is for the most part traditional so the analytical tools I already knew was not ideal to handle the diverse tonality of movie scores. I knew “Hollywoodian” movie scores since Erich Wolfgang Korngold and John Williams had their roots in nineteen century classical music, also know as the romantic period of classical music. *Romantic* music is mostly tonal, meaning it uses major and minor chords and scales to build the tonality, but it is not necessarily functional. By that I mean progressions build upon the *circle of fifths* and the famous $I - IV - V^7 - I$. This brings us to the idea of a *tonic*, a tonal “home” where we feel at peace after pursuing the chord furthest away from the tonic, the *dominant*. It would be wrong to say that romantic music does not utilize the idea of a tonic, but it was not a concept expanded upon as they did in the classical era. Instead they had what I call *tonal centers*. These are focal point for any given progression and stands as the root of origin. This differentiation is necessary because harmonic progressions can be made with a different logic than that of the circle of fifths. There are plenty of analytic tools to chose from when working with functional music and atonal music but I was having a hard time finding the right tool for non-unified tonal

The filmography in question:

- The Motion Picture, 1979, TOS
- The Wrath of Kahn, 1982, TOS
- First Contact, 1996, TNG
- Nemesis, 2002, TNG
- Star Trek, 2009, Reboot
- Into Darkness, 2013, Reboot

music.

During my research I came upon Frank Lehman's dissertation on "*Reading Tonality Through Film: Transformational Hermeneutics and the Music of Hollywood*" (2012). His research was focusing on *neo-Riemannian Theory*, a theory made to address the analytical challenges nineteen century music presented, applied to film music. I will discuss the application and execution of this theory in chapter 4. To further explain how my analysis is constructed, I will discuss music analysis in general in chapter 3.

To aid the reader in analytic process I have chosen to include the transcriptions immediately following the corresponding analysis. The analytic legend will be discussed on page 31 and finally I will present my conclusions in chapter 11.

As a final note I want to talk about what I am not covering in this thesis. First of all, I have chosen to use musical terms and notation to explain my findings. This means the reader will have to have a fairly advanced understanding of musical theory to fully appreciate the content of this thesis. I will not talk about film music history in general: How the film music traditions has evolved from live music to Korngold to Steiner to Williams and even Zimmer is extremely interesting, but it is covered to such an extent elsewhere there simply is no point including it and secondly, I do not believe being reminded of this knowledge will have an impact on the understanding of the main topic of this thesis. My goal is that the content of this thesis provides ample understanding of the main analysis and that the reader will come to appreciate the inner workings of the music in question and how it has evolved.

2

Star Trek

Space: the final frontier.

*These are the voyages of the starship Enterprise. Its continuing mission:
to explore strange new worlds, to seek out new life and new civilizations,
to boldly go where no one has gone before.*

— As narrated by Captain. Jean-Luc Picard
(Day, 2005)

These Are The Voyages...

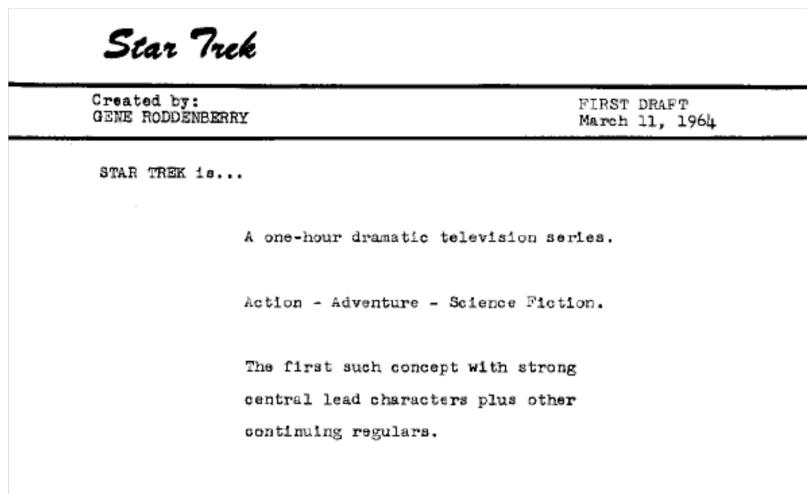


Figure 2.1: Gene Roddenberry's original pitch for Star Trek to NBC

STAR TREK IS AN American science fiction TV and motion picture franchise, created by *Gene Roddenberry*. It debuted with the pilot “The Cage” in 1966 on NBC and has since evolved into hundreds of books and novels, several computer games, six TV series¹, and twelve motion pictures². The basic premise of the show is an interstellar adventure in the beginning of the 23rd century where we follow the actions of the captains and crew on the starship Enterprise.³ They follow the orders of *Starfleet*, which is the scientific and exploratory branch of *The United Federation of Planets*, a multi-planetary alliance. Star Trek displays a rather philanthropic view on the human race. The economy has moved

¹ See table 2.1

² See table 2.2

³ Except DS9 which takes place on a space station rather then a starship.

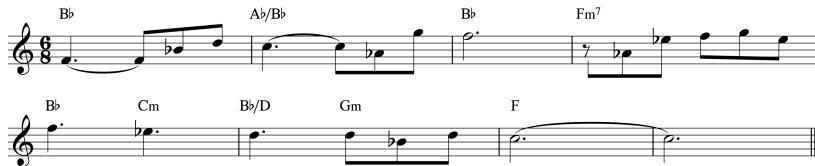
away from capitalism, the crime rate is essentially zero. Religion is essentially obsolete. According to Roddenberry, humans in the 23rd century are,

(...)intelligent, witty, thoughtful, compassionate, caring (...) – but they have human faults and weaknesses too – although not as many or as severe as in our time. (...)The major problems facing the human species have been resolved and the Earth has since been transformed into a human paradise. (Roddenberry, 1987)

The crew on the Enterprise consists of both humans and aliens, and the hierarchy and terminology used is in direct parallel with the Navy: they have ranks like Chief Petty Officer, Ensign, Captain, and Admiral and they use terms like “port” and “starboard” and the bridge is the main control room.

While Star Trek is widely regarded as a successful franchise, it had a rough start. *The Original Series* ran for only three years. Even though the fan base was substantial, ever increasing budget cuts and tighter time schedules caused the show to finally call it quits in 1969. It would be 10 years before Paramount dared commit to a large scale motion picture. (Bond, 1998, p. 87)

Star Trek Main Title



TV-show	Running
The Original Series	1966-1969
The Animated Series	1973-1974
The Next Generation	1987-1994
Deep Space Nine	1993-1999
Voyager	1995-2001
Enterprise	2001-2005

Table 2.1: Star Trek TV series

Figure 2.2: Goldsmith's "Star Trek Theme"

The Music of Star Trek

Much like the Super Mario theme, the Star Trek theme is nearly ubiquitous in pop culture and is immediately recognized by most. In fact, Star Trek catch phrases have taken root in English vernacular. There are few that have not heard the phrase “Beam me up, Scotty!” or “Damn it man. I’m a doctor, not a [...]”. With similar influence, the music of Star Trek has pioneered what the “future” sounds like. The first Star Trek movie: *Star Trek: The Motion Picture* (ST:TMP), directed by Robert Wise, was planned as early as 1973, but Paramount did not have the confidence to finance an expensive and risky production. It was not until George Lucas’ space epic *Star Wars* (1977), scored by John Williams, hit the theaters to enormous applause that Paramount gave ST:TMP the green light (Bond, 1998). *The Original Series* had new music written for every episode, bearing the signature of some of the all time greatest composers in Hollywood⁴. However, when choosing who would compose the very first Star Trek motion picture, Paramount looked for a composer that could match the epic score of John Williams.

Jerry Goldsmith selected filmography:

- Planet of the Apes (1968)
- The Omen (1976)
- Alien (1979)
- Poltergeist (1982)
- First Blood (1982)
- Twilight Zone: The Movie (1983)
- Total Recall (1990)
- Basic Instinct (1992)
- Mulan (1998)

⁴ See table 2.3

Jerry Goldsmith (1929-2004) had just finished the acclaimed 20th Century Fox production *Alien* (1979) and had scored several science fiction blockbusters already, making him the perfect candidate (Bond, 1998, p. 87).

Much of the stylistic elements in ST:TMP are borderline avant-garde and full of romantic elements. Goldsmith utilizes synthesizers, church organs, and a custom made instrument called "Blaster Beam".⁵ Some of the movie scenes are fairly long making some of the musical cues fairly long as well. Goldsmith utilizes this by building cues matching the slow tempo and thus bringing more traditional compositional couplings into the cue. In Leaving Drydock (analyzed on p. 61) we see a cue 3:32 minutes long accompanying "The drydock sequence". Jeff Bond notes the following:

Maintaining interest in the scene was a task that mainly fell to Goldsmith, and the challenge resulted in a piece of music with an unusual amount of classical development and structure, a hallmark of Goldsmith's epic style of the late '70s and early '80s. (Bond, 1998, p. 88)

The now famous march Goldsmith composed later became the title track for the TV-series "*The Next Generation*" making it what we could call the "Star Trek Theme".

Star Trek, movies and composers

Film	Composers	Date Released	Series
Star Trek: The Motion Picture	Jerry Goldsmith	1979, 7 December	The Original Series
ST II: The Wrath of Khan	James Horner	1982, 4 June	
ST III: The Search for Spock	James Horner	1984, 1 June	
ST IV: The Voyage Home	Leonard Rosenman	1986, 26 November	
ST V: The Final Frontier	Jerry Goldsmith	1989, 9 June	
ST VI: The Undiscovered Country	Cliff Eidelman	1991, 6 December	
ST VII: Generations	Dennis McCarthy	1994, 18 November	The Next Generation
ST VIII: First Contact	Jerry Goldsmith†	1996, 22 November	
ST IX: Insurrection	Jerry Goldsmith	1998, 11 December	
ST X: Nemesis	Jerry Goldsmith	2002, 13 December	
Star Trek XI	Michael Giacchino	2009, 8 May	Reboot Cast
ST XII: Into Darkness	Michael Giacchino	2013, 16 May	

† With his son Joel Goldsmith

⁵ A musical instrument refined and made famous by Craig Huxley.

Table 2.2: Star Trek filmography

Star Trek II: The Wrath of Khan was *James Horner's* (1953-2015) big breakthrough as a feature film composer. The main reason Goldsmith was not utilized for this offering was budget cuts, making Horner -the "new guy" - much cheaper to hire. Horner had scored a number of low-budget science fiction films previously, like "*Humanoids From the Deep*" and "*Battle Beyond the Stars*", which incidentally has a striking similarity to the Star Trek II score.

The overall tone of the score owes much to Goldsmith and Williams; however, the score is manifestly Horneresque. The score is well loved by fans and critiques, despite the poor orchestral performance, which is under balanced and poorly executed.

Although not part of my thesis as such, it is worth noting some of the quite serious critique Horner has received for his compositional

James Horner selected filmography:

- Aliens (1986)
- Honey, I Shrunk the Kids (1989)
- Searching for Bobby Fischer (1993)
- Braveheart (1995)
- Apollo 13 (1995)
- Titanic (1997)
- Avatar (2009)
- The Karate Kid (2010)

works. He is one of the most used composers in Hollywood but he has had to endure a lot of critique over the years for plagiarism. The case of artists “borrowing” from one another is not new and perhaps is impossible to avoid. The TED talk “Embrace the Remix”⁶ discusses this phenomenon thoroughly. I believe no motif can be copyrighted as such, but they are part of a composers signature. In Horner’s case the evidence would suggest that he not only borrows motives and harmonic progressions, but also references entire passages without giving credit to the original composer, like *Sergei Prokofiev’s - Alexander Nevsky: part 5*, which he references extensively in both his Star Trek scores, and Sergei Rachmaninov’s theme from his first symphony. It is also very clear that he reuses his own material quite frequently, like the example mention earlier in which the similarity between “*Battle Beyond the Stars*” main title and the main title of **Star Trek II** are quite striking.

Star Trek: First Contact was directed by Star Trek actor *Jonathan Frakes*, released in 1996 and was subject to high expectations because the previous **Star Trek: Generations** had been less of a success. While the overall looks of **Generations** was beautiful, the story had several weak points and distanced it self from the audience. The music got negative critique as well:

MacCarthy’s overture theme was memorable and his Nexus music quite beautiful, but the lack of repeated motifs and melodies in many of the other scenes lent a somewhat disconnected quality to the score as a whole. (Bond, 1998, p. 152)

The pressure was therefor on to remedy the damage done. Jerry Goldsmith was hired to do the job, but because of time pressure Goldsmith hired his son, *Joel Goldsmith* to do the majority of action cues for the score. Joel produced total of 22 minutes of music for **First Contact**.

Star Trek: Nemesis was the tenth, and last in the line of Star Trek films for some years to come. It was the third film featuring the cast of **The Next Generation** and was the mark of the end of an era. It was directed by *Stuart Baird* and was released in 2002. Jerry Goldsmith was hired to score **Nemesis**, his fifth Star Trek movie (see figure 1.1) and had long since become synonymous with the music of Star Trek (Bond, 2013). Much of the score focuses on *Shinzon’s theme* (see figure 2.4), the main antagonist. Goldsmith treats his theme through several variations throughout the score⁷. Goldsmith revisits themes from his past Star Trek movies in bits and pieces throughout, they are after all an important part of Star Trek lore, but he also created new themes that stand out as highlights of the movie. Like the new, heroic march in *Battle Stations* “(...)that encapsulates Picard’s sense of duty and his inherent nobility perfectly.” (Bond, 2013, p. 215)

In 2009 **Star Trek**, directed by *J.J. Abrams*, came to cinemas across the world. Michael Giacchino, a regular collaborator of Abrams’, was to pick up the mantle after Goldsmith. With almost 30 years of Star Trek history, expectations for Giacchino’s score was high. The score turned out to strike out in a new branch leaving the old thematic material behind for a new, omnipresent theme Giacchino uses in virtually

⁶ Ferguson (2012)



Figure 2.3: Snippet from the first bar of Rachmaninov’s 1st Symphony. Exactly the same as Horner’s “Danger Theme” which he has used throughout his career, and notably in **Star Trek II: “Surprise Attack”**

Michael Giacchino selected filmography:

- Medal of Honor: Underground (2000)
- The Incredibles (2004)
- Lost (2004)
- Mission: Impossible III (2006)
- Ratatouille (2007)
- Up (2009)
- Dawn of the Planet of the Apes (2014)

⁷ Hint’s of it may be heard at the end of the main title *Remus* and first heard clearly in the second half of *Positronic Signal*.



Figure 2.4: Part of Shinzon’s Theme

every major cue. All over, Giacchino's score uses a simpler harmonic language, and lacks the "sci-fi adventure" found in Goldsmith and Horner's Star Trek scores. *Star Trek* did suffer from post production difficulties regarding the sound FX and music. The music got reworked extensively on the cutting floor, making analyzing the music from the source harder, due to the layers of dialogue and special-effects.⁸ Fortunately a "Deluxe" edition CD was released which figured many of the original, unaltered cues. This, combined with the altered cues we hear in the movie score, gives us a reasonable view of the overall sonority.

Star Trek: Into Darkness is the second of the rebooted series, and was released in 2013 with J.J. Abrams and Giacchino at the helm. Now a defined part of something new, the sweeping romantic grandeur from Goldsmith's time is part of the *Ars Antiqua*. Apart from the overall flattened harmonic complexity the score suffers from a low and lifeless mix in the final movie. Nevertheless, the score is more intricate than the 2009 movie and shows that Giacchino now had the time to evolve the sound and adapt it to the new universe.

⁸ "In some cases, cues that had been displaced from their intended positions were replaced or supplemented by editorial creations." (Takis, 2010)

Composer	Movie score	Series theme	Incidental music
Alexander Courage		The Original Series	The Original Series
Cliff Eidelman	ST VI: The Undiscovered Country		
David Bell			Deep Space Nine, Voyager, Enterprise
Dennis McCarthy	ST VII Generations	Deep Space Nine	The Next Generation, Deep Space Nine, Voyager, Enterprise
Diane Warren		Enterprise	
Fred Steiner			The Original Series, The Next Generation
George Dunning			The Original Series
Gerald Fried			The Original Series
James Horner	ST II: The Wrath of Khan ST III: The Search for Spock		
Jay Chattaway			The Next Generation, Deep Space Nine, Voyager, Enterprise
Jerry Goldsmith	ST: The Motion Picture ST V: The Final Frontier ST VIII: First Contact ST: IX Insurrection ST X: Nemesis	The Next Generation Voyager	
Leonard Rosenman	ST IV: The Voyage Home		
Michael Giacchino	Star Trek XI ST XII: into Darkness		
Paul Baillargeon			Deep Space Nine, Voyager, Enterprise
Ron Jones			The Next Generation
Sol Kaplan			The Original Series
Velton Ray Bunch			Enterprise

Table 2.3: List of Star Trek composers

3

Musical analysis

THE ANALYSIS PORTION of this thesis is organized into cues chronologically. Each subject cue is treated in two parts. The first part contains the primary analytical body. Following is the transcription, which ranges from a plain harmonic analysis to full-on orchestral transcriptions. The reason they are located here, and not in the end as an appendix, is because it will be handy to refer to them while reading through the analysis.

My analysis will cover several angles of approach. Mostly I will be looking at harmonic patterns, i.e. the relationship and logic between harmonic transformations, but I will comment on tonality and sonority produced by melodies and/or orchestration. Although the main body of this understanding stems from Frank Lehman's work on *neo-Riemannian theory* (nRT) applied to film music, traditional analysis is very much part of the total picture. However, as I will try to describe throughout chapter 4, the traditional way of explaining tonal progressions in relation to a traditional tonic in regard to film music is forfeit.

In this chapter I will explain how I intend to use traditional tools. My musical background is from two very different worlds: One side of my training is classical orchestration and composition, and the other is that of a professional musician, primarily playing non-classical literature like jazz, fusion, and progressive rock. While reading academic papers on music theory, I have come across some quite creative ways to notate chords as unambiguously as possible. For the most part they feel un-intuitive for me as a musician. My solution is to alternate chord notation in two ways, both standardized in the performing world of musicians. The first and primary way is based on jazz traditions, C for C major, Cm for C minor and superscripts for added non-triadic pitches, like C^{maj7}. Superscripted integers assume the diatonic scale except chords considered dominant, i.e. C⁷, C⁹, C¹¹ and C¹³. Superscripted integers in parenthesis assume an alteration of that specific scale degree. The second way is to supply Schenkerian roman numerals, using superscripts for added non-triadic pitches wherever possible or practical. I will try to use roman numerals to show scale degree but sometimes it simply is not ideal because film music is governed by what is happening on the screen, not by classical conventions. Or as

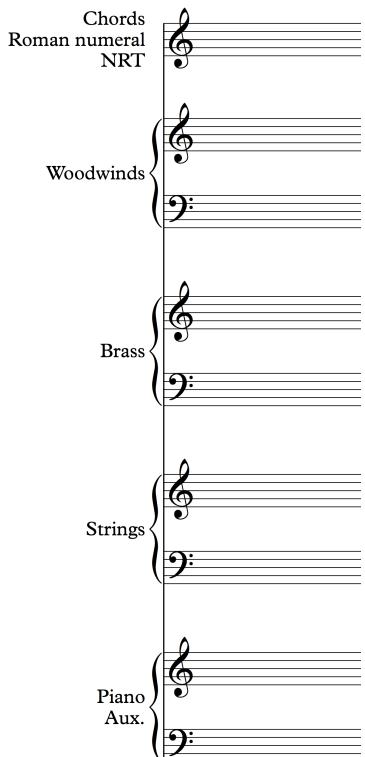


Figure 3.1: Analysis Legend

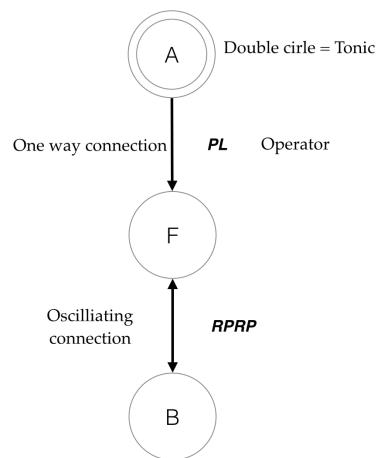
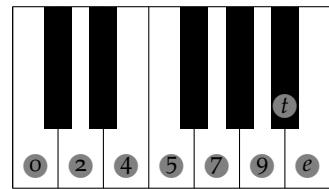


Figure 3.2: nRT analysis legend

Lehman puts it: "It is defiantly "non-absolute" music, composed as but one part of a superordinate text." (Lehman, 2013b, p. 180). Thus, since film music seldom is rooted in a specific key I will refrain from giving key signatures unless very clear indications of the opposite. When practical I will draw Schenker graphs to illustrate a underlying harmonic pattern. I will indicate possible keys below the staff. *Inversions* containing pitches in the root triad will be handled using the letters b_c or d - the latter used for hexachords and/or diminished chords. Non-triadic pitches will be displayed with a /, like C/B \flat . When sheet music is impractical, I'll refer to pitches by name or *pitch classes*, (*pc*), using brackets [] and sometimes a keyboard illustration. Unless otherwise noted, *pitch class* assumes an absolute o regardless of key signature, making o=C and 11=B. Step 10 and 11 are usually referred to as t and e. It is important to note that I will transpose every example given by pitch classes to C. When I need to talk about specific *scale degree* in relation to a chord, I'll use a *caret* to indicate this. Ex.: The $\hat{3}$ of C=E.



4

neo-Riemannian Theory

TRADITIONAL tonal harmonic analysis is designed to handle the sonorities constitutionalized in the Baroque and Classical eras. The idea is that any given chord tells something about where it stands in relation to the chord preceding it. Put rather bluntly every chord, given a long enough chain, could be interpreted as a dominant or a part of a cadence heading for, or avoiding a tonic. While this is perfectly adequate for most diatonic-based music, chromatic music that is triadic but not altogether unified under a diatonic rule, does serve a challenge for traditional functional analysis. *neo-Riemannian theory* (nRT)¹ was developed to handle this issue.

Let us examine the following:

¹ The abbreviation is nRT, with a small *n* pointing to the fact that this maybe has grown beyond the "neo" tag. "(...)this no-longer so "neo" theoretical system." (Lehman, 2015, p. 1)

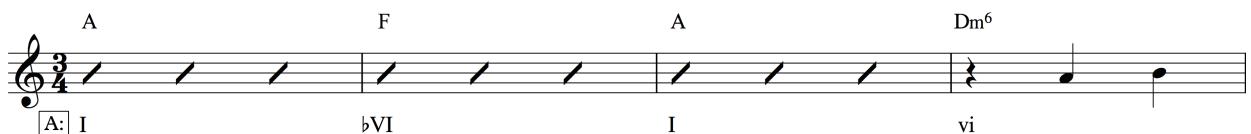


Figure 4.1: Ilia's Theme 1

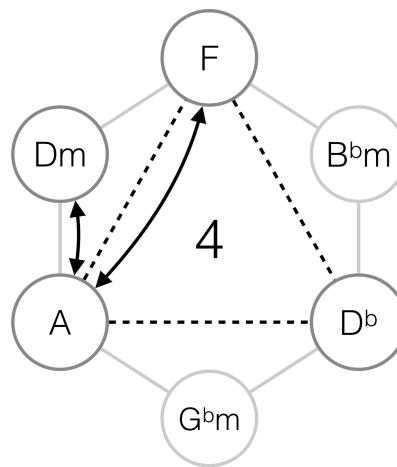


Figure 4.2: Ilia's Theme m. 1-4

This show an excerpt from Goldsmith "Ilia's Theme" from ST:TMP². If one where to analyze this using traditional tools we immediately run into a problem: What to define as the tonic? If we assume A, then F

² See the complete sheet music on page 36

becomes $\flat VI$, and this makes sense because the Dm^6 makes what we can identify as a *Hollywood Cadence* ($iv \Rightarrow I$). If we assume F, then A becomes III and the Dm^6 becomes vi which also makes sense. Within the context of a circle of fifths it makes no sense at all as it fits neither heads or tail of the Tonic, Subdominant, Dominant triangle for neither A nor F. So right from the get-go we have two possible candidates for a tonic. The same dichotomy of tonality continues throughout the first part of the cue.

Figure 4.3: Ilia's Theme 2

In m.17-22, figure 4.3, we see some movement that further could indicate A as tonic seeing that we have both III/A and vi/A , acting internally as $V/vi - i/vi$ and prepare us for m.23 where the yet another juxtaposition seems to unfold: figure 4.4.

B

Figure 4.4: Ilia's Theme 3

Now $D\flat/C\sharp$ revolves around $B\flat$ and then $B\flat$ and E before ending on Dm^6 . The internal logic does not comply with the ordinary predictions we can make from $I - IV - V$ and its children. If we, however, apply the logic from transformational analysis we get to another picture.

We can make a circle of chords based on different transformations then that of the circle of fifths, in this case major thirds, we can see some sort of logic underpinning the progression. If we assume A as the *tonal centre* we can see that by moving from I to iv making it the new vi we get the formula: $I \Rightarrow iv/vi$ thus producing a circle of thirds. This circle is known as a NR_4 circle and I will explain these circles in greater detail further down the chapter. With this we have a model that explains the majority of the first part.

With the second part, figure 4.4, we can build a figure, (4.5) using the same logic; a *hexatonic* circle of thirds that we can see is in relation with the movements in m.23-30 where the tonal centre is $C\sharp$ from which it is possible to build a *octatonic* circle of minor thirds, and thus making the relationship between $B\flat$ and E not so far fetched as one might think. To top it off, one might make a compound diagram that shows that the two parts are indeed related thanks to the common chord $C\sharp$. The conclusion from this short example is that the chord

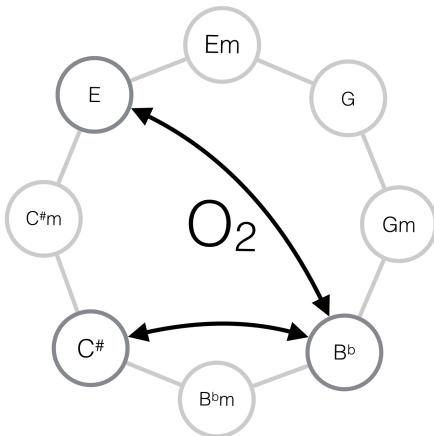


Figure 4.5: Ilia's Theme, m.23-29

structure is largely governed by thirds and that **m.1-22** (Letter A) and B has a common root.

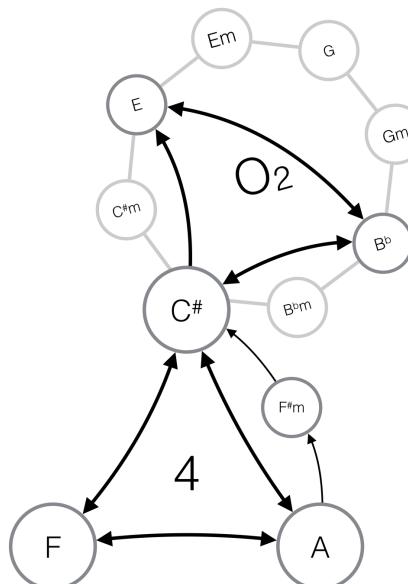


Figure 4.6: Ilia's Theme, m.17-29

nRT originates from David Lewin. He wrote an essay in 1987 titled: “*Generalized Musical Intervals and Transformations*”³ that laid the premise for this type of transformational analysis. According to Cohn it was created to serve the analytical needs of nineteenth century music. Film music tonality has a lot of commonality with nineteenth century tonality in that the tonality is mostly tonal, but ununified⁴, i.e. not bound by a diatonic scale. Since Lewin’s essay where published, the theory has gained traction with the likes of Richard Cohn⁵ and Frank Lehman⁶, among others. Lehman’s work on how to apply *transformational analysis*, as this branch of theory is called, to film music is what has enabled me to do this thesis.

³ Lewin (2007). I suggest reading Richard Cohn’s introduction to neo-Riemannian theory, (Cohn, 1998) for those of historically inclined as I will not cover the historical backdrop in this thesis.

⁴ Cohn (1998, p.2)

⁵ Cohn (1996)

⁶ Lehman (2012)

Ilia's Theme

Figure 4.7: Ilia's Theme

Jerry Goldsmith

A

3 A F A Dm⁶

[A:] I bVI I vi

5 A

5 A F A F

I bVI I bVI

9

9 A Gm G[#] A Dm⁶

I bvii #VII I vi

A'

13 A F A F

I bVI I bVI

17

17 A C[#] A F A F#m piano

I III I bVI I 8vb iv/III
vi/I

B

23 C[#]/F B^b/F C[#]/G[#] B^b E B^b E Dm⁶

C#: III I bII VI III I bII VI V VI V III iv bii v 8va

A''

31 A F A F A C[#]/G[#]

A F A F A C[#]/G[#]

3

The main idea of nRT is to look at harmonic relations without necessarily relating to a tonic. It does so by looking at how one state changes into another, i.e. *transforms*. It excels as a tool to look for patterns in harmonic progressions otherwise obscured. It is a bit like *Schenker graphs*, but unlike Schenker, nRT does not need to work around functional analysis. It does so with tools that look at how a triad *transforms* from one to another. Broken down to its bare essentials nRT has three operators that transforms a triad to something else. These are **(P)arallel**, **(L)eittonwechsel** and **(R)elative**. Each operator works both ways; when you have executed [operation] it works in reverse as well. **P** displaces the non-*ic*₅ pitches in a triad, i.e. moves the third between minor and major. For the sake of examples, we assume the first chord in the transformation is *I*; ergo, in Schenkerian terms it would look like this: *I* \Leftrightarrow *i*. **L** displaces non-*ic*₃ pitches, i.e. the unison in major or the fifth in minor: *I* \Leftrightarrow *vi*. **R** Displaces the non-*ic*₄ pitches, i.e. the fifth in major and unison in minor: *I* \Leftrightarrow *vi*. By combining these three operators, it is possible to create *compound operators* and, as such, maneuver from and to each major and minor triad in the 12 tone scale. However, to address some of the more common maneuvers, I will be using a couple of other tools as well. **(S)lide**⁷, a shorthand for **L**, **P** and **R**, displaces *ic*₅ pitches, i.e. they move both the prime and fifth: *I* \Leftrightarrow *bii*. **(N)ebentonverwandt**⁸ displaces the *ic*₃ pitches, i.e. *I* \Leftrightarrow *iv*. **(M)oodelverwant**⁹ displaces *ic*₄ pitches, i.e. *I* \Leftrightarrow *v*. I will use *T_n* to indicate a direct transposition. In addition to the nRT operators, I will use diatonic functions as well, indicating **Tonic**, **(Dom)inant**, **(Subd)ominant**, **(Med)iant** and **(Subm)ediant**

Operators	Example
<i>T_n</i> : Transpose by <i>n</i> semitones.	<i>T₂</i> \Rightarrow C=D
Parallel: Displace non- <i>ic</i> ₅ pitch	P \Rightarrow C=Cm
Leittonwechsel: Displace non- <i>ic</i> ₃ pitch	L \Rightarrow C=Em
Relative: Displace non- <i>ic</i> ₄ pitch	R \Rightarrow C=Am
Slide: Displace <i>ic</i> ₅ pitches	S \Rightarrow C=C \sharp m
Nebentonverwandt: Displace <i>ic</i> ₃ pitches	N \Rightarrow C=Fm
Modelverwant: Displace <i>ic</i> ₄ pitches	M \Rightarrow C=Gm
Tonic	Chord on scale degree $\hat{1}$
DOM	Chord on scale degree $\hat{5}$
SUBD	Chord on scale degree $\hat{4}$
MED	Chord on scale degree $\hat{3}$
SUBM	Chord on scale degree $\hat{6}$



Figure 4.8: Basic NRT operators

⁷ Introduced by Lewin 2007.⁸ From Weitzmann via Lehman 2012.⁹ Introduced by Frank Lehman in his 2012 dissertation.

Table 4.1: Transformational Inventory

Symmetry

Just as we build circles of fifths (**L-R**), we can do the same with different combinations of operators, e.g. **NR**, **PL**, **PR** and **MR**¹⁰. These circles are what we call *networks*. Each network consists of *nodes* that represent a chord. A collection of networks is called a *hyper system*, for instance, a *hyper octatonic system*. Any given network has a unique name that

¹⁰ It is possible to build other circles, but these are the ones I will use in this thesis

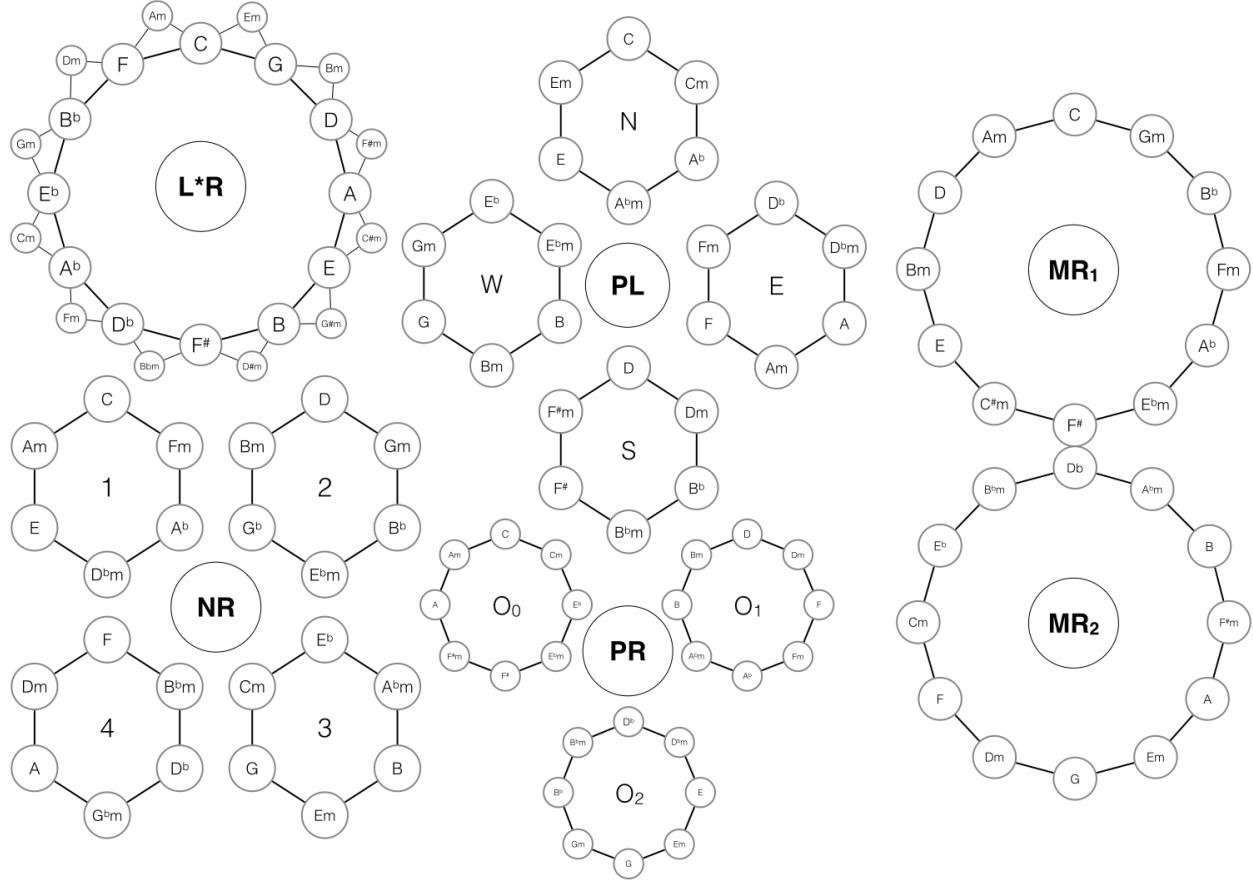


Figure 4.9: neo-Riemannian circles

mirrors the way they were created: **LR**, **NR_{1–4}**, **PL_{n,e,s,w}**, **PR** **O_{0–2}** and **MR_{1–2}**. In the case of **NR** and **PL**, we call them hexatonic networks because they consists of six nodes. It takes four networks to cover the entire major/minor cycle. **PR** is octatonic and uses three networks to fill the entire major/minor cycle. The **MR** network uses twelve nodes and requires two networks to complete the entire major/minor cycle. When a progression follows only a progression exclusively in one network, I call it a “*forced progression*” and when a progression moves from one network to another, regardless of its parent, it is called a network modulation. In my analysis, these networks will always be displayed with their designators, but not necessarily the parent, for instance **PL**. Figure 4.9 gives an overview over the networks I will be using.

The heaxtonic **PL**, **PR** and octatonic **PR** networks are borrowed from Lehman and Lewin's papers and follow the designators used by them.

Augmented Chords

nRT was made to address major and minor triads and does so quite brilliantly. It does not, however, handle augmented chords at all. The question thus presents itself: How are augmented chords to be dealt with? One approach is, simply, to indicate that something has happened which could be interpreted with transformational glasses. Frank Lehman postulates an asterisk, *(Lehman, 2012), when dealing with

"near transformational" moves. This mostly refers to the appearance of tetrachords like $F \Rightarrow C^7$ which, in nRT terms, translates to *LR . The asterisk tells us that we have not accounted for the added $\flat 7$, but overall, the added note does not affect the main idea. Hugo Riemann's term for this is "*kläng*". With augmented and diminished chords, however, the *kläng* is altered beyond the point of recognition and function. To show an example on such case that features this problem I refer to figure 4.10. The excerpt is from the Overture of ST:TMP and shows a pass from $I \Rightarrow v\flat^5$. Here we cannot say we have the same *kläng* when we arrive at v , since the fifth is diminished and there's an added $\flat 7$. I have chosen not to make new operators for this at this time and will use $*$ to indicate that the root movement is conserved but the *kläng* has been altered.

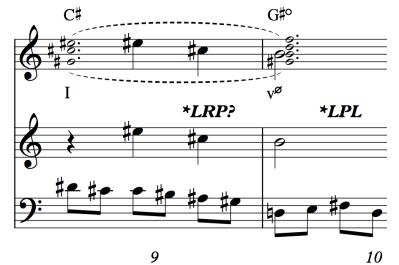


Figure 4.10: ST:TMP Overture m. 9-10

5

Star Trek: The Motion Picture

Overture

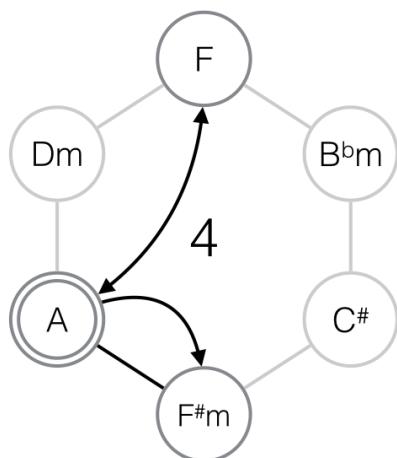
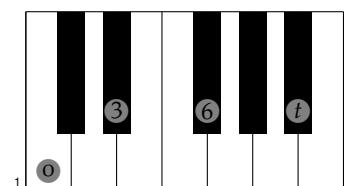


Figure 5.1: ST:TMP: Overture Intro

STAR TREK: THE MOTION PICTURE (ST:TMP) opens to a black screen accompanied by a musical overture. It portrays “Ilia’s Theme”, otherwise known as the “Love Theme”. It is hard to find a tonic in this piece within the confines of traditional tonal music. However, I do not believe it to be of any consequence since working with film music literature often is about finding the *tonal centre*. In the case of the romantic and string saturated “Ilia’s Theme” we find the main sections moving around between four pillars; A, C \sharp , F and C, each fixated in a hexatonic network. The introduction, figure 5.1 starts with what would seem to be a progression tonally unrelated to the axiom of the song, C \sharp , but is in fact part of the same hexatonic NR₄ circle. After F \sharp m⁶ \Rightarrow C \sharp , a “hollywood cadence”, the main theme starts.

The main theme of this cue mainly plays out in the NR₄ circle. The exception is a network modulation to the PL_N circle. There is an argument to be made for viewing the G \sharp m^{7(b5)}, pc [036t]¹, as a E⁹/G \sharp , but nevertheless, the main body of the chord is a G \sharp m transformed with b5 (figure 5.2).

The second pass of A, figure 5.3, works much in the same way, but instead of modulating outside the NR₄, Goldsmith does a minor



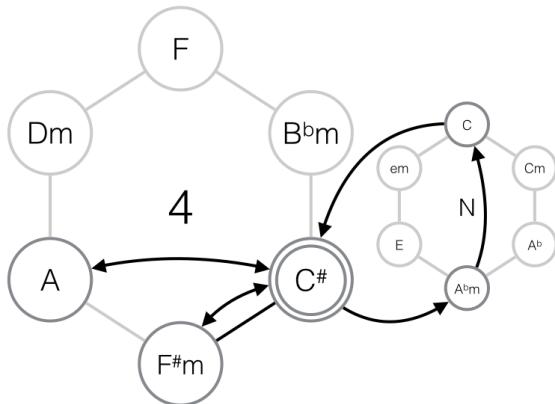


Figure 5.2: ST:TMP: Overture A

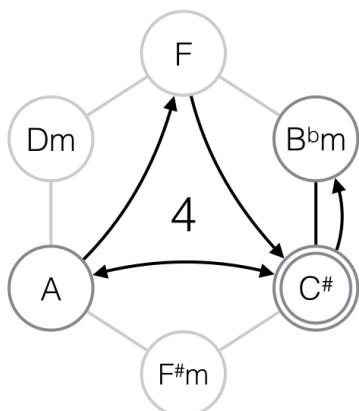


Figure 5.3: ST:TMP: Overture A'

transformation on the melody, **m.17-18**, making room for a simple LP to F^2 . The part ends with a $A\sharp m$, making it the new *iv*, another ‘hollywood cadence’².

² Which might be seen as a projection to the following part.

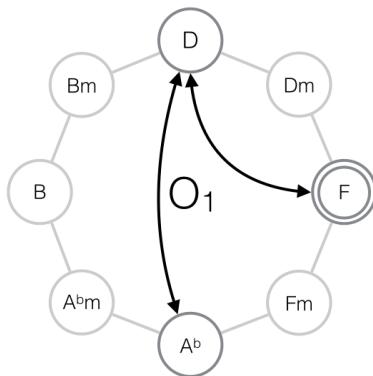


Figure 5.4: ST:TMP: Overture B

The second part, and theme (figure 5.4), of the cue is entirely situated in O_1 . With a pedal A acting as a coupling between F and D , acting as $\hat{3}$ and $\hat{5}$, Goldsmith activates a melody with a *lydian* tinge before deploying a *Major Tritone Progression* (MTTP), now famously associated with space³.

When Goldsmith returns to the main theme, figure 5.5, it is transposed to from $A\flat$ to C , making yet another mediant modulation. The harmony is rooted in C with a pedal G . The melody uses $\flat 6$, hinting at a mixolydian $\flat 6$, the fifth mode in melodic minor. Through yet another

³ A term borrowed from Murphy (2006). This progression to be treated in greater detail as I progress through this text.

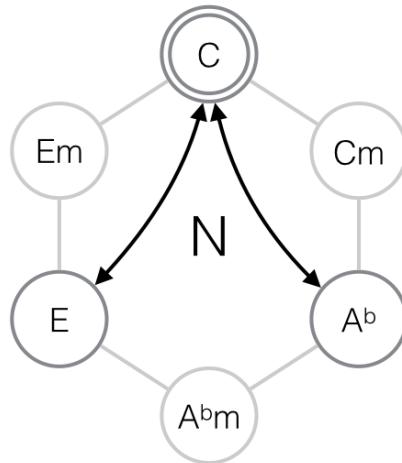


Figure 5.5: ST:TMP: Overture A"

mediant modulation to E Goldsmith executes the outro.

The Outro, figure 5.6, is a proto-projection of the now famous "Enterprise Theme" composed by Alexander Courage. The cadence: $I - \flat VII - IV - I$ is a *subtonic plagal cadence* and is reminiscent of the old "spaghetti" westerns, which frequently use the *subtonic half cadence*: $I - \flat VII - V - I^4$. It serves two purposes: (1) to project and prepare the enterprise theme and (2) to prepare the overall sonority for the main title.

⁴ Lehman (2013a)

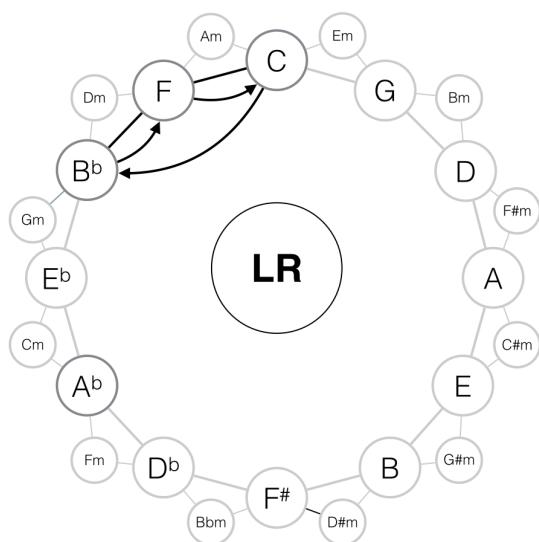


Figure 5.6: ST:TMP: Overture Outro

Star Trek: The Motion Picture
Overture
Star Trek: The Motion Picture: Limited Edition (2012), Track 1

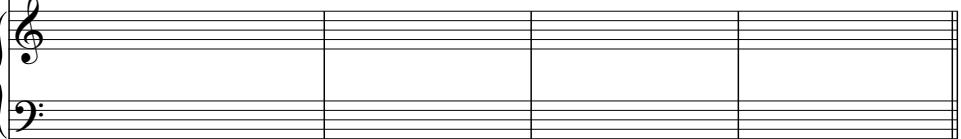
Jerry Goldsmith

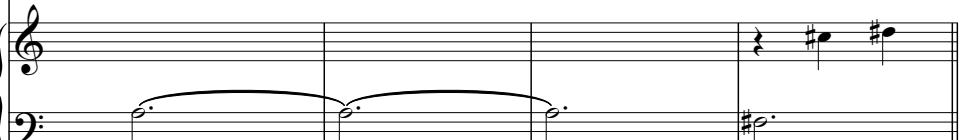
Intro

A F/A A F#m⁶

Harmony { 

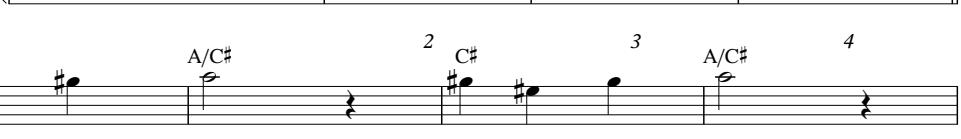
Woodwinds { 

Brass { 

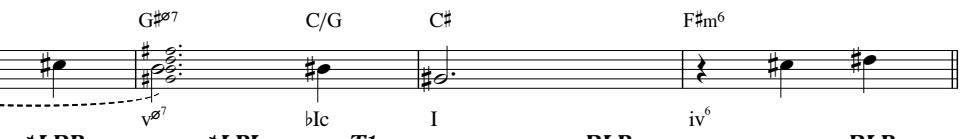
Strings { 

Piano Aux. { 

A

Hrm. { 

Str. { 

Hrm. { 

Str. { 

9 10 11 12

A'

Hrm. {
Str. {

13 14 15 16

B

Hrm. {
Br. {
Str. {

17 18 19 20

A'

Hrm. {
Br. {
Str. {

21 22 23 24

B

Hrm. {
Br. {
Str. {

25 26 27 28

A''

Hrm. { C/G Ab/G C/G Ab/G C/G E
 lc bVI^d lc bVI lc #III
 Str. { PL LP PL LP LP PL
 Pno. { Aux. { 8va

C 29 30 31 32 33 34 35

Hrm. { C Bb/C F/C C
 I bVII IVc LR
 Ww. { RLRL (T10) LR
 Br. {

Str. {

Pno. { Aux. { harp

36 37 38 39 40

Main Title

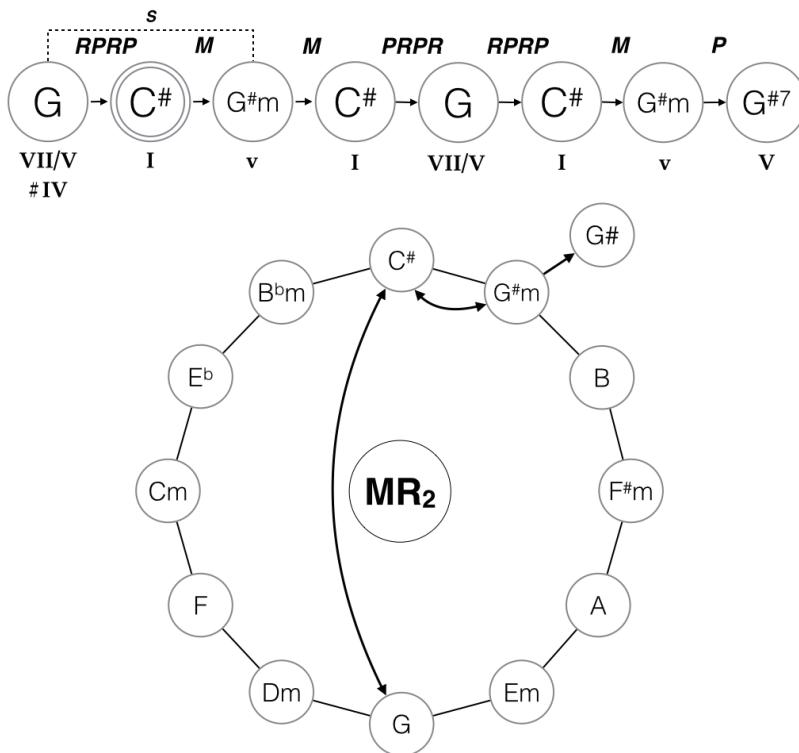


Figure 5.7: ST:TMP: Main Title Intro

The music starts with the Paramount logo, and music is played with the opening credits. The form is reminiscent of a Rondo, where the overall structure is ABABA, containing development parts. In figure 5.7, we see that the first two chords in this main title tell us quite a few things. First of all, the relation between them are a tritone, and the G does not seem to be the tonic. The *Major Tritone Progression* (MTTP) in science fiction movies have been around since the 1950's (Murphy, 2006) and the origins of tritone progression related to something extraterrestrial is generally believed to stem from Holst's: *The Planets*,⁵ thus signifying both the monstrous (Fairweather, 2014) and outer space. By executing this from the very beginning, he implicitly states that this tale will not necessarily happen on earth and, at the very least, contains imagery depicting something outer-wordly, i.e. there will be a monster in some form or another.

The G in this progression poses a challenge to traditional tonal thinking, and if one assumes G as tonic the rest that follows is, at best, very unstable. The C# seems to carry the majority of tonic weight. The G in the context of C# could be interpreted as either #IV or VII/V but both cloud the musical intention. G#m could be considered a mixolydian v thus making a S relationship with G. The cadence is, thanks to the G#, acting as a (bVII) subtonic cadence to Bb giving a nod to the musical practices in established in Western's between 1920 and 1940.

Figure 5.8, A shows that the main theme is situated harmonically

⁵ Mars: Strings play col legno in 5/8, while the brass plays the main motif: [0,7,6] bringing the tritone into play as the harbinger of death; Mars, the God of War.

Frank Lehman's essay on "Hollywood Cadences" tells us this type of cadence is common with the practices found in Westerns and its sub-genres. This provides a clue to what we can expect. Roddenberry himself has called Star Trek a "space western" and the cadences used are evidence of this: "The cadences capacity to index film genre is as potent as its ability to punctuate and structure dramatic action." (Lehman, 2013a)

around fifths. The tonality is clearly mixolydian with evidence enclosed in the minor *v*. The sublime references to “cowboy music” keeps recurring with the oscillating $I \Leftrightarrow \flat V$. The part repeats and ends on F. I have also provided a simple Tonnetz graph⁶ of the passage to show that it is possible to discern a pattern using this. It is, however, not something I will continue to use as is to obscure in its reading.

⁶ Blue is minor and Red is major.

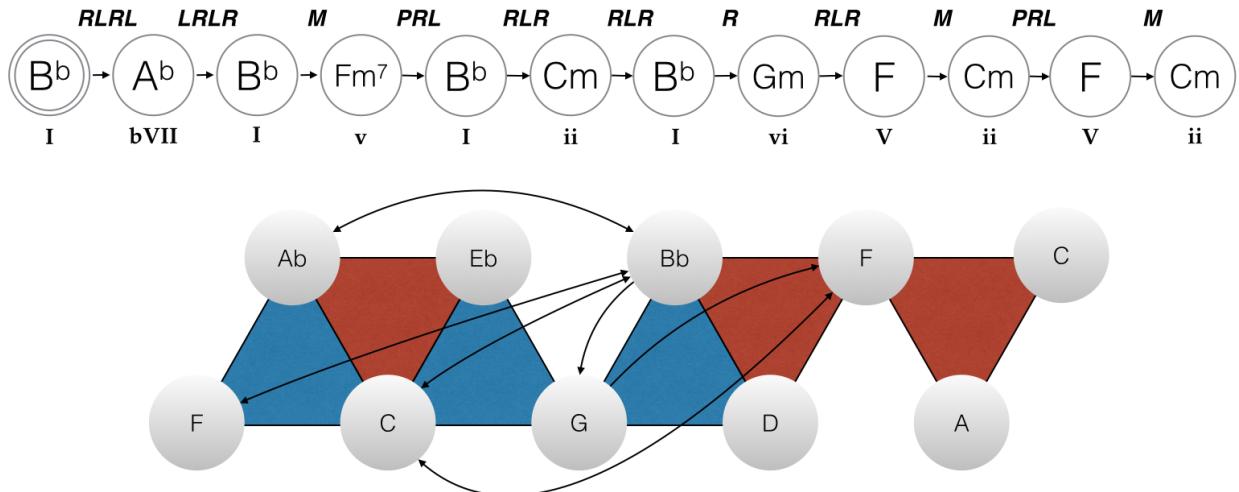


Figure 5.8: ST:TMP: Main Title A

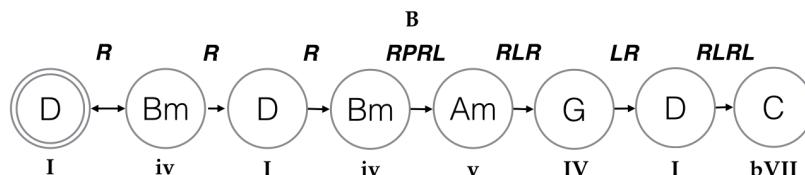


Figure 5.9: ST:TMP Main Title B

The entrance to B, figure 5.9, is via F, which acts as ($\flat III$) in the new tonic making it a *type 2 flat mediant modulation* (Lehman, 2013a) seen both from the tonic D and F. The music is still saturated in mixolydian scale, providing both the minor *v* and the *bVII*.

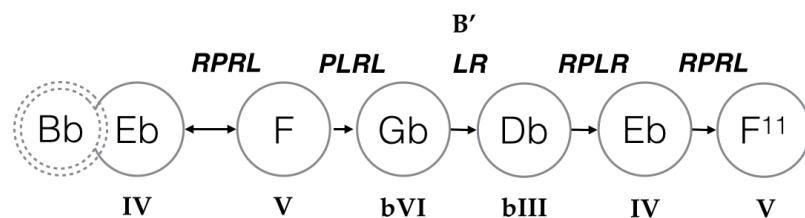


Figure 5.10: ST:TMP: Main Title B' 1

B' starts with the modulation from the previous C/D to E \flat . The C/D, in this case, acts as bVII in D, but if one would think it as a **Dominant** in G: D¹¹, in relation to E \flat it provides a *deceptive cadence*, making the formula: $V(D^{11}) \Rightarrow \flat VI(E\flat)$. But the tonal trickery does not stop there. Goldsmith makes E \flat to be IV, making the key B \flat . The

evidence for that lies in the cascading cadences that follow. If F is V then its connections to the other chords can be seen in figure 5.11. Every one of those connections seen individually and in relation to F is tried and true. What is unusual, is that instead of doing one of them, Goldsmith unleashes a string of them, making a circular modulating network.

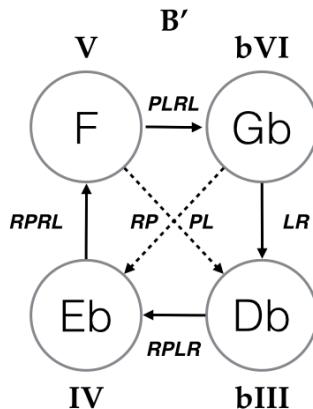


Figure 5.11: ST:TMP: Main Title B' cadence

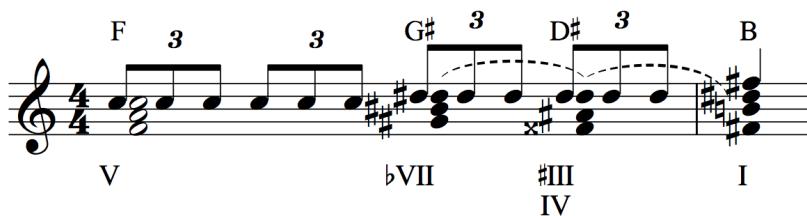


Figure 5.12: ST:TMP: Main Title A'' cadence

So far the overall structure has been: Intro, A, A', B, B' and now A returns mostly identically to previous iterations, breaking the mold with only one repetition (figure 5.12). The modulation in m.24 works through three chords sharing one common tone, thus making the maximal usage of one tone to serve as a modulation catalyst, G \sharp : 5, D \sharp : 1 and B: 3. Even though the key is B \flat , the relation between F and B is a MTTP, further solidifying its position in the Star Trek universe.

With the reintroduction of B'', we see that the melody is slightly more relaxed and the modulation formula has changed. When looking at figure 5.13 one sees that the modulation described in 5.12 has carried the tonal center further away from B \flat than in previous modulations. The transition from B'' to B''' also follows a different formula; instead of returning to B \flat , Goldsmith modulates to D.

The four bars of B''' has a solid C pedal over D and the tonality is clearly lydian. The modulation in m.31-32 is possible to view in the PL structures, see figure 5.14.

The final A''' works over a mixolydian G pedal and finishes with a *Aeolian Cadence*, bVI – bVII. Overall, the tonality is traceable through the octatonic circles and figure 5.15 gives a summary of this.

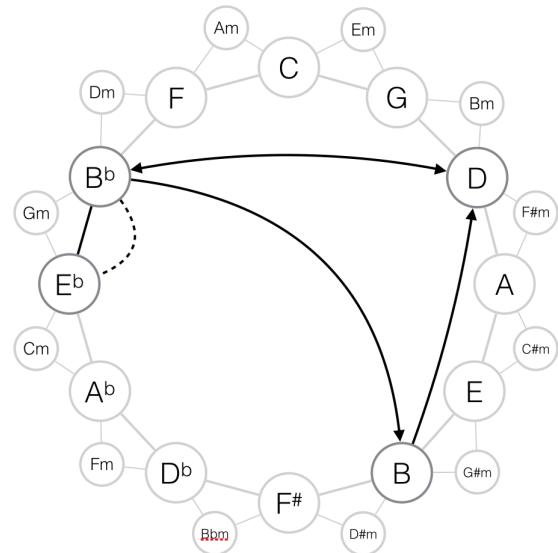


Figure 5.13: ST:TMP: Main Title AB modulation chart

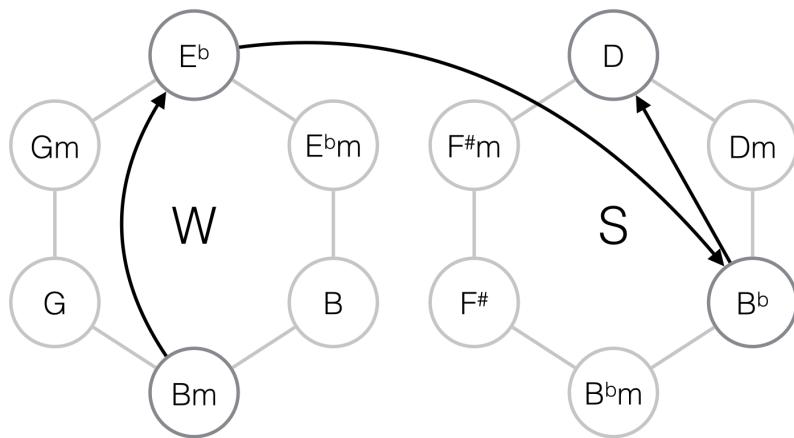


Figure 5.14: ST:TMP: Main Title B'' cadence

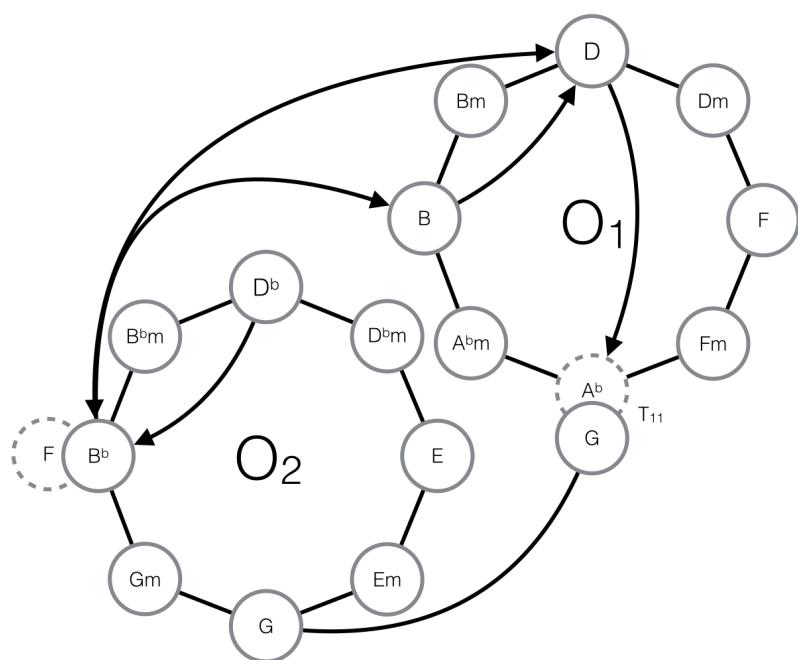


Figure 5.15: ST:TMP: Tonal overview

Star Trek: The Motion Picture
Main Title
Star Trek. The Motion Picture: Limited Edition (2012), Track 2

Jerry Goldsmith

Intro [1:00:00] $\text{♩} = 107$

Harmony: G C# G \sharp m C# G

Brass:

Strings:

Piano Aux.:

1 2



Hrm. G C#/G# G \sharp m G \sharp 7

Br. RPRP \sharp Vc LRP (M) \sharp i P \square B \flat : bVII T2

Str. +W.W.

3 4

A 1:00:09

B♭ A♭/B♭ B♭ Fm⁷

Hrm. I bVII I M v⁷ PRL

trp. RLR (T10) LRLR (T2)

Br. 3 3 3 3 3 3 3 3

Str. 7 7 7 7 7 7 7 7

5 6



B♭ Cm B♭/D Gm F Cm F Cm

Hrm. I ii Ib vi V M ii PRL V M ii RLR

Br. RLR RLR R RLR 3 3 3 3 3 3

Str. 3 3 3 3 3 3 3 9

Chimes.

Pno. Aux. {

7 8

A' [1:00:18]

Hrm. B♭ A♭/B♭ B♭ Fm⁷

I RRLR LRLR I M M

Br. 3 3 3 3 3 3 3 3

Str. 7 7 7 7 7 7 7 7

9 10



B♭ Cm B♭/D Gm F

Hrm. I RLR ii RLR lb R vi RLR D: V bIII hrn. RP

Br. 3 3 3 3 3 3 3 3

Str. 3 3

Chimes.

Pno. Aux. {

11 12

B 1:00:27

D Bm D Bm

Hrm. I vi I vi R

Br. R 3 R 3 R 3 R

Str. 7

i3 14



Hrm. D⁵ Bm Am G D C/D

I vi v IV I RPLRLR (T10) LR (SDOM) RLRL E♭ VII VI PR

Br. trp.

Str. chimes

Pno. Aux. 15 16

B'

Hrm. Eb F/Eb Eb F⁷

I II IV V I IV II V

RPRL **LRPR** **RPRL** **LRPR**

Br.

Str.

17 18



Aeolian Cadence

Eb F/C G_b/B_b D_b Eb(sus4) F(sus4) F

I II bIIIb bVII I IV II V

RPRL **T1** **LR** **RLPR** **RPRL**

DOM
(RL) [B_b:]

Br.

Str.

Pno. glock.

Aux.

19 20

A'' [1:00:45]

Hrm. B♭ I T10 bVII T2 I M v Fm⁷

Br. trp. 3 3 3 3 3 3 3 3

Str. 3 3 3 3 3 3 3 3

21 22



B♭ Cm B♭/D Gm F G♯/D♯ D♯/C♯

Hrm. I ii Ib vi V bVII LR [B:] #III IV PL

Br. RLR RLR R RLR trp. 3 3 3 3 3 3 3 3

Str. 3 3 3 3 3 3 3 3

23 24

B'' [1:00:55]

Hrm. G♯m B G♯m

I vi I vi R R R R R

Br. 3 3 3 3 3 3 3 3 3 3

Str. 3 3 3 3 3 3 3 3 3 3

25 26



B G♯m F♯m E/G♯ B A/B B(sus4)

Hrm. I vi v IVb I T10 D: V bVII T2 PR

Br. R RLR LR 3

Str. 3 3 3 3 3 3 3 3 3 3

chimes.

Pno. Aux. { 3 3 3 3 3 3 3 3 3 3

B'''

Hrm. C D/C D/C

Br. $\begin{matrix} \flat \\ VII \end{matrix}$ I I

Str. $\begin{matrix} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \end{matrix}$ $\begin{matrix} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \end{matrix}$ $\begin{matrix} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \end{matrix}$ $\begin{matrix} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \end{matrix}$

T2 T10

29 30



C Bm⁷ E \flat /G B \flat B \flat /C D

Hrm. $\begin{matrix} \flat \\ VII \end{matrix}$ vi $\begin{matrix} \flat \\ II \end{matrix}$ $\begin{matrix} \flat \\ VI \end{matrix}$ I V

Br. LRL LPL LR LP RL
(DOM)

Str. $\begin{matrix} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \end{matrix}$ $\begin{matrix} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \end{matrix}$ $\begin{matrix} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \end{matrix}$ $\begin{matrix} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \end{matrix}$ $\begin{matrix} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \end{matrix}$ $\begin{matrix} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \end{matrix}$

31 32

A''' 1:01:12

Hrm. G F/G G F/G

I PRLR bVII RLRP I PRLR bVII RLRP

trp. 3 3 3 3 3 3 3 3 3 3 3 3

Br. 3 3 3 3 3 3 3 3 3 3 3 3

Str. 3 3 3 3 3 3 3 3 3 3 3 3

Glock. 3 3 3 3 3 3 3 3 3 3 3 3

Pno. Aux. 3 3 3 3 3 3 3 3 3 3 3 3

33 34

This musical score block shows two measures of music. The first measure starts with a休符 (rest) followed by a G note. The second measure starts with a F/G chord. The vocal line consists of the lyrics "I PRLR bVII RLRP I PRLR bVII RLRP". The trumpet part (trp.) has a rhythmic pattern of eighth-note groups of three. The brass (Br.) and strings (Str.) provide harmonic support with sustained notes. The glockenspiel (Glock.) and piano (Pno. Aux.) add rhythmic patterns. Measure 33 ends with a fermata over the third note of the RLRP pattern. Measure 34 begins with a G note.

1:01:23

Klingon Battle

Hrm. G⁵ E⁵ B_b/D A_b/E_b E_b F G⁵

I R vi bIIIb PRLR bII LR bVI RLRP bVII RLRP I

Br. 3 3 3 3 3 3 3 3 3 3 3 3

Str. 3 3 3 3 3 3 3 3 3 3 3 3

35 36 37

This musical score block shows three measures of the Klingon Battle section. The vocal line consists of the lyrics "I R vi bIIIb PRLR bII LR bVI RLRP bVII RLRP I". The brass (Br.) and strings (Str.) provide harmonic support with sustained notes and rhythmic patterns. Measures 35 and 36 end with fermatas over the third note of the RLRP pattern. Measure 37 begins with a G⁵ note.

Leaving Drydock

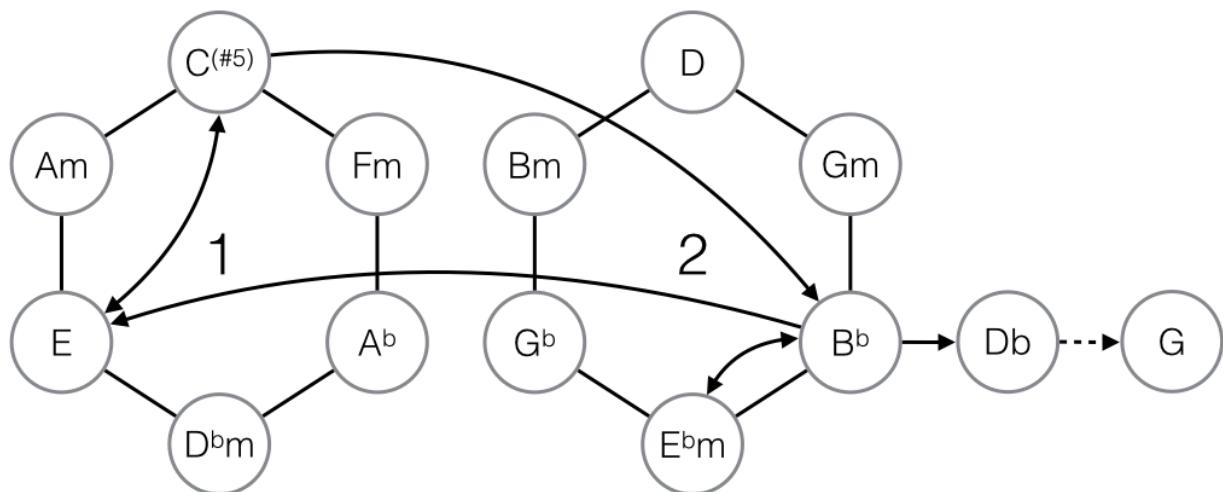


Figure 5.16: ST:TMP: Leaving Drydock A

With every crew post now filled, the Enterprise prepares to leave drydock. The music provides an underscore that builds on the tension and excitement that both crew and audience would feel. The time is $\frac{6+3}{8+4}$ creating a 3:2 displacement, which Goldsmith uses as a musical device throughout. Goldsmith uses N, thirds and *Major Tritone Progression* (MTTP)'s to build progressions. See figure 5.16. On a few occasions, he uses altered chords and when he does use altered chords there is most likely a *common tone junction* (figure 5.17) binding them together.

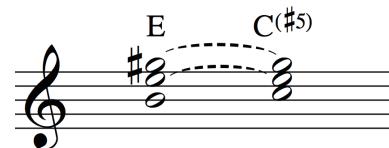


Figure 5.17: ST:TMP: Leaving Drydock A: Common Tones

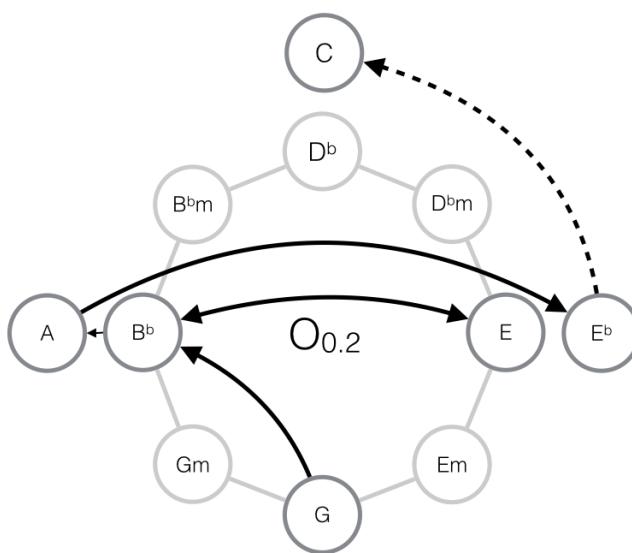


Figure 5.18: ST:TMP: Leaving Drydock B

When preparing to exit from the interior to exterior shot, Goldsmith uses a MTTP to advance (**m.23**). When we see the outer hull of Enterprise, Goldsmith uses his Star Trek theme, and does so throughout the score with various treatments. Figure 5.18 sees **m.28-30**. It is a three-

part trumpet, brassy and pompous, but does not match any significant event on the screen. The harmonic movement however is interesting. Goldsmith moves in minor thirds right up to A, where he makes *chromatic network modulation*. What follows is the Star Trek theme in 3:2 until we cut to the bridge again.

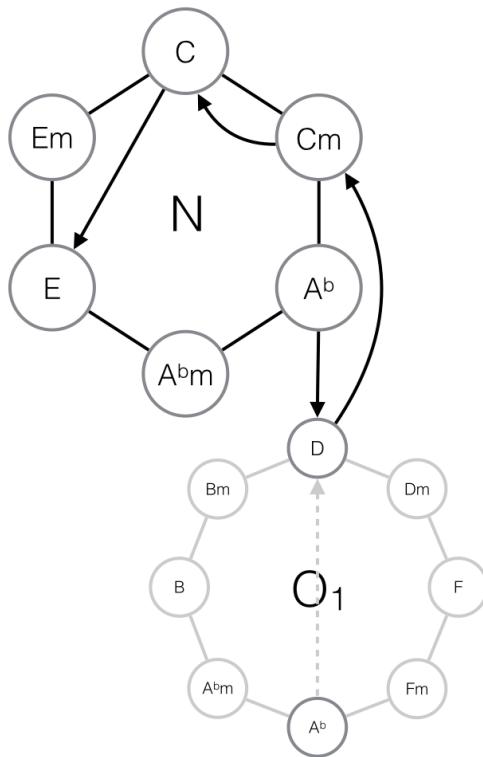


Figure 5.19: ST:TMP: Leaving Drydock D

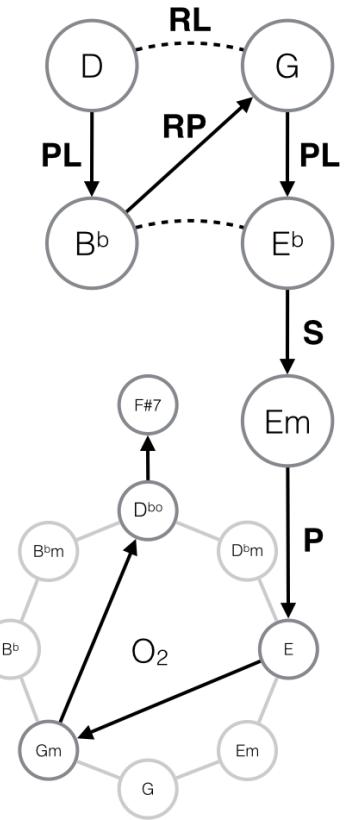


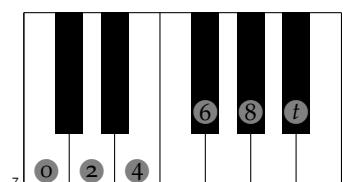
Figure 5.20: ST:TMP: Leaving Drydock J

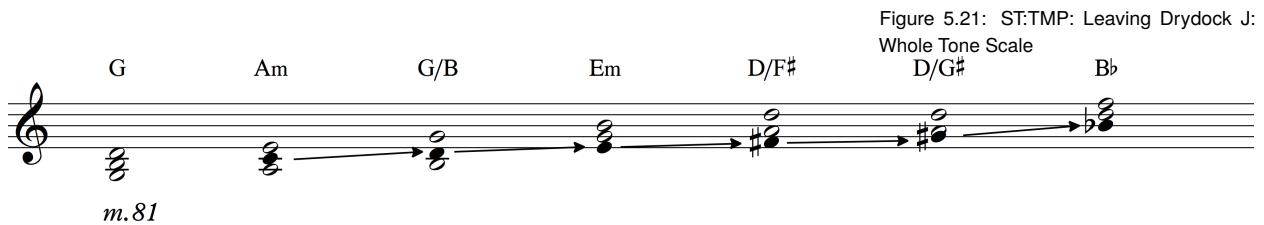
The restless ostinato mimics Kirk, who is clearly electric: “Thrusters ahead, Mr. Sulu.” The music builds and the harmonic progression (figure 5.19) is as anxious as the captain. This time, the MTTP is slightly softened with the incursion of G/B just before B♭. We once again see the Enterprise, now leaving the drydock, followed by the full version of the Star Trek theme.

At m.72 we are back at the Enterprise, now down in engineering. The restless theme is back, mirroring the people working excitedly. With a new MTTP we are out in space again, viewing the Enterprise slowly flying with Earth and the sun as a magnificent backdrop.

With a small meter change, $\frac{3}{8}$, we follow up from last shot down in engineering, figure 5.20. Concealed inside the chord progression is the whole tone scale, $pc [0,2,4,6,8,1]^7$ figure 5.21, creating a sense of wonder. The progression follows in figure 5.20. Goldsmith works through major thirds, connecting them with a minor third, passing on with a SLIDE and continuing with chords with roots that follow minor thirds until m.95 where he prepares a MTTP, getting there through the two common tones F♯ and A♯ connecting $D\flat^{dim}$ and F♯. After a small 3:2, mixolydian progression reminiscent of the Star Trek theme, we head back out to the Enterprise, now burning her engines to the Star Trek theme m.99-103.

Back inside, the restless theme is repeated once more, continuing the





third-progressions, figure 5.22. At **m.111** the captain requests “Viewer ahead.” and we get a glimpse of the stars as they pass the ship. Kirk looks outwards proudly while the Star Trek theme plays 3:2. We cut to the outside and the theme returns to its original form as we see the Enterprise rockets past Venus.

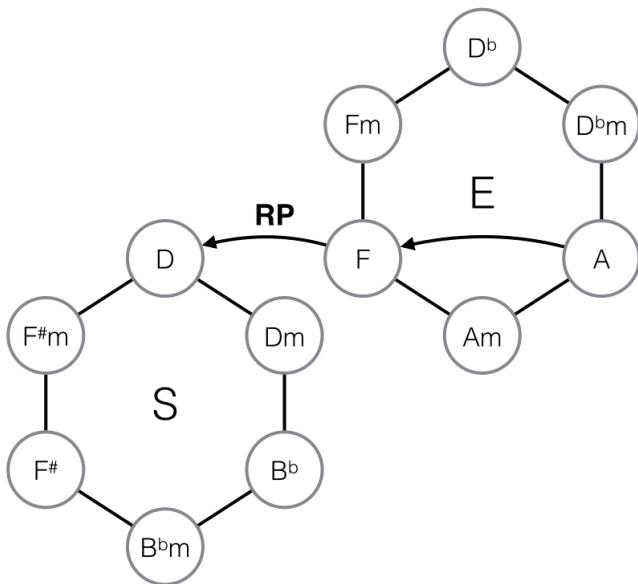


Figure 5.22: ST:TMP: Leaving Drydock M

Star Trek: The Motion Picture
Leaving Dry dock
Star Trek: The Motion Picture: Limited Edition (2012), Track 8

Jerry Goldsmith

$\text{♩} = 70$

B \flat ⁵

A B \flat

2 3

E \flat m

B \flat 4 E/B 6 7

C(\sharp 5) 8 9 E/B 10 11

C(\sharp 5) 12 13 B \flat /D 14 15

E 16 17 B \flat /D 18 D \flat 19

20 21 22 23

B G F/G

G 24 B \flat /G 25 E/G 26 B \flat /G B \flat /F A/E 27 E \flat

28 29 30

C

C mixolydian

31 32 33

D

A♭/C D/C

34 35 36 37

Cm/E C/E C(♯11)/E E/B E/B G/B

38 39 40

E

B♭ mixolydian

41 42 43 44

B♭ Cm B♭/D Gm F F E♭/F

45 46 47 48

B♭ B♭/A♭ B♭ Fm/B♭

49 50 51 52

B♭ Cm B♭/D Gm F Cm F

53 54 55 56

F D Bm D Bm

D Bm Am G/B D C/D 60

57 58 59 60

61 62 63 64

G E♭ F/E♭ E♭ F

E♭ F G♭ D♭ E♭(sus4) F(sus4)

61 62 63 64

65 66 67 68

69 70 71

H F D♭ A♭ D♭

72 73 74 75 76

I G F/G G F/G

G 77 Am G/B 78 Em 79 D/F♯ 80

72 73 74 75 76

J 81 D/A♭ 82 B♭ 83

84 85 86 87

G/B

Em 88 E 89 Gm/D 90 D \flat ^o 91 F \sharp /C \sharp

K C 92 B \flat /C 93 Dm/C 94 B \flat /C 95 Cm \sharp ¹¹

L B 96 A/B 97 B 98 F \sharp m 99 100 101 102 103

M A 104 105 106 D(\sharp \sharp)¹¹ 107

D/A 108 109 110

N D \flat 111 B/D \flat 112 D \flat 113 B 114 D \flat 115 B 116 D \flat /A \flat

O E 111 D/E 112 E 113 B \flat /D 114 E 115 116

117 118 119 120 121

6

Star Trek II: The Wrath of Khan

Main Title

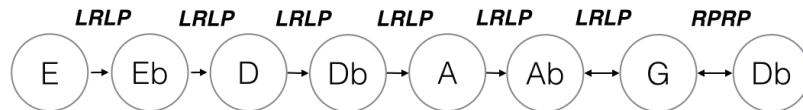


Figure 6.1: ST 2: Main Title Introduction

A SYNTH PROVIDES a slowly evolving mysterious pad while the logos pass the screen. Soon after, we are traveling slowly through space and the trumpets play the Star Trek theme sequenced chromatically, figure 6.1, from E downward to Eb. The horns start playing a fiery sextuplet pattern in D doing a sort of call-and-response with the trumpets, sequencing downwards chromatically one more step to Db. Horner now repeats the sextuplet theme once more, but does a mediant modulation to A; the combined melodies create a whole tone feeling [1,3,5,9,E]¹. On m.12, the Star Trek Logo is seen moving into screen and it conforms to the screen by m.13. The tonal center in m.11-12 is G, flanked by a predominant chord substitute, Ab and a *Major Tritone Progression* (MTTP) to Db.

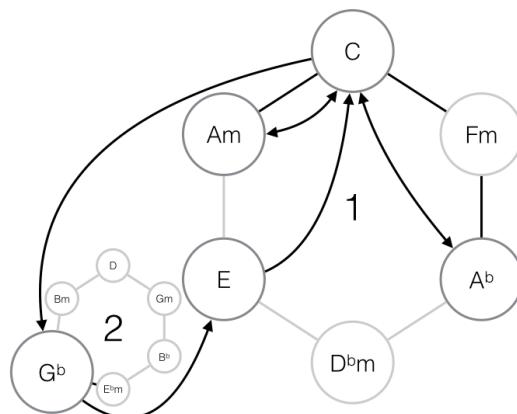
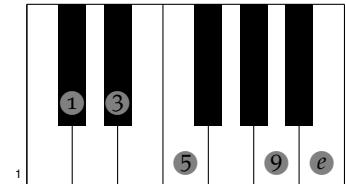


Figure 6.2: ST 2: Main Title A, pass 1

The main theme is fanfare in C, figure 6.2, but as one might expect

from James Horner, the tonality is based on different circle then that of fifths. Instead of maneuvering in NR_1 , he makes a short detour to NR_2 to fetch G^\flat . The melody uses the fifth mode of the melodic minor scale, i.e. the so called mixolydian $\flat 6$ [0,2,4,5,7,8,T]². A duality might be assumed by the fact that both Ionian, with the occurrence of [9], and melodic minor [8,10] is explored within the same phrase.

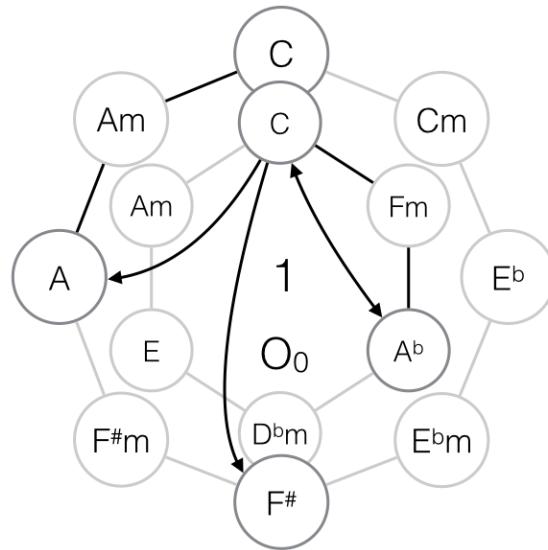
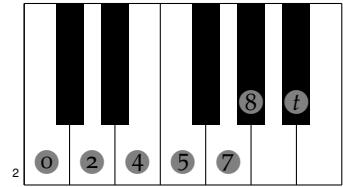


Figure 6.3: ST 2: Main Title A, pass 2

The second pass, figure 6.3 holds the same harmonic idea but uses A instead of Am, making the progression almost completely Octatonic.³

³ Much like we find in Goldsmith's harmonic language.

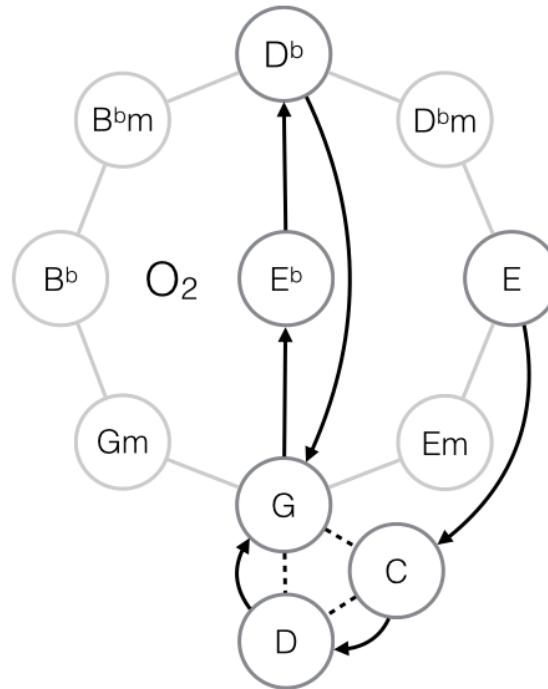


Figure 6.4: ST 2: Main Title B

B starts with a triplet ostinato over $E(\sharp 5)$, played by the cellos, figure 6.4. The sense of Cartesian dualism intensifies with the continued mixolydian $\flat 6$, cross combining major and minor. Harmonically the difference between A and B is enough to distinguish them, but the

melody plays a variation on the main theme making the whole section somewhat familiar, yet distant to its origin. On bar 4 m.26, Horner starts a cascading flurry of chords, seemingly unrelated, but seen through nRT, there is a clear idea driving the progression. From E, Horner makes a plagal cadence IV – V to G before moving through $\flat VI$ – $\sharp IVb$, making the bass line reminiscent of an Aeolian Cadence $\flat VI$ – $\flat VII$ – I. m.32 lands on G while the melody is working a chromatically altered octatonic scale.

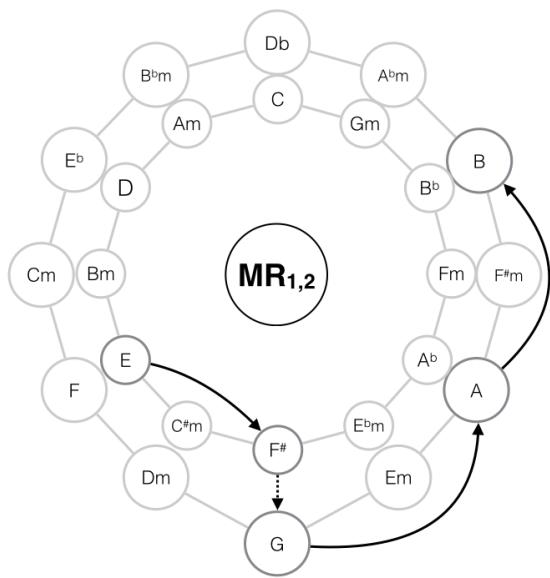
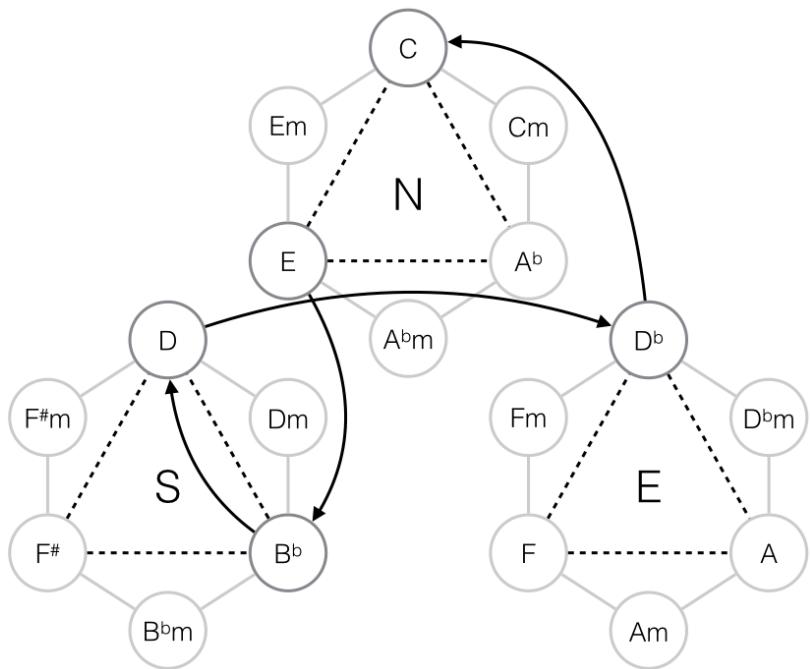


Figure 6.5: ST 2: Main Title B'

After a reprise of A, a longer variation of B is developed, beginning at m.40, figure 6.5. This time the low strings are playing melody while the high strings are playing the virtuosic sextuplet ostinato. This is the same ostinato that earlier was played as an arpeggiated E^{aug} , only double time. The harmonic backdrop moves through the MR circles, making a network modulation when jumping from $F\sharp$ to G. The melody follows the harmonic structure until m.48 where it follows the phrygian dominant scale [0,1,4,5,7,8,T]. The part repeats with the melody played by the high strings, ever so slightly altered, and the ostinato returns to the previous pattern.

The ending introduces itself in m.56, figure 6.6, where Courage's Star Trek theme rings in with a lone trumpet. All the while, the strings play the same phrygian dominant scale as a counterpoint, landing on B. From there the fanfare theme is used, sequencing ever upwards. If one were to see the final C as Tonic, the progression would follow: III – (MTTP) – $\flat VII$ – (Mediant) – II – $\flat II$ – (tritone substitute) – I, making it a heavily distorted iii – vi – ii – V – I.

Figure 6.6: ST 2: Main Title Ending



Star Trek II: The Wrath of Khan

ST: The Wrath of Khan - Main Title

Star Trek II: The Wrath Of Khan (2009), Track 1

James Horner

James Horner

Intro

LRLP

synth pad 2 simile 3 4 5

synth pad

2

simile

3

4

5

Musical score for orchestra and piano, page 10, section D. The score includes parts for Hrm. (Horn), Br. (Bassoon), Str. (String Bass), Pno. (Piano), and Aux. (Auxiliary). The piano part features a bass line with sustained notes and eighth-note patterns. The bassoon part has a melodic line with grace notes and slurs. The strings provide harmonic support with sustained notes. The section concludes with a dynamic marking of **LRLP**.

D \flat A

Hrm. Br. Str.

6 6 6 PL 6 LRLP

9 10

==

A \flat G A \flat G D \flat G D \flat G

Hrm. Br. Str.

LRLP PLRL LRLP RPRP PRPR RL

11 12

==

A C Am/C C A \flat /C C Am/C C G \flat /C E C

Hrm. Br. Str.

R R PL LP R R RPRP LRPR PL

13 14 15 16

B

Hrm. A♭ C A C F♯ C E

Br. { PL LP RP PR RPRP PRPR LP

Str. { 17 18 19 20

Hrm. C D

Str. { PL LRLP RL 21 22 23

Hrm. G E♭

Str. { 9 9 RS RLRL 24 25 26

Hrm. C D♭/F G⁷ E♭ D♭/F

Str. { RPRP RS RLRL RPRP 27 28 29

Hrm. Str.

G⁷

30

E♭ D♭/F

RS RLRL RPRP

31

Hrm. Br. Str.

G

octatonic

3

6 3

9 9

32

Hrm. Br. Str.

C A♭ C Am C G♭ C

A

PL LP R R RPRP PRPR PL

33 34 35 36 37

Hrm. A_b/C C A C F[#] C

Br. { LP RP PR RPRP PRPR LP

Str. { 12

38 39

B' E

Hrm.

Br. { 8

Str. { 6 6 6 6 6 6 6 6

40 41

F[#]

Hrm.

Str. { RPRL LRPR

42 43

E F[#]

Hrm.

Str. { RPRL LRPR

44 45

G A

Hrm. Str.

RPRRL RPRL

46 47

B

Hrm. Str.

RL

48 49

D E F♯ E

Hrm. Str.

RPRL LRPR RPRL

50 51 52

F♯ G

Hrm. Str.

RLPL RPRL

53 54

A

Hrm. | Br. | Str.

RPRPL

55 56 57

E

Hrm. | W.W. | Br. | Str.

E/B B \flat D/A

RL **RPRP** **LP**

58 59 60 61 62 63

C \sharp /G \sharp **C \sharp** **C**

Hrm. | W.W. | Str. | Pno. Aux.

PRPL

3 4 3 4

64 65 66 67

synth pad

68

Enterprise Clears Moorings

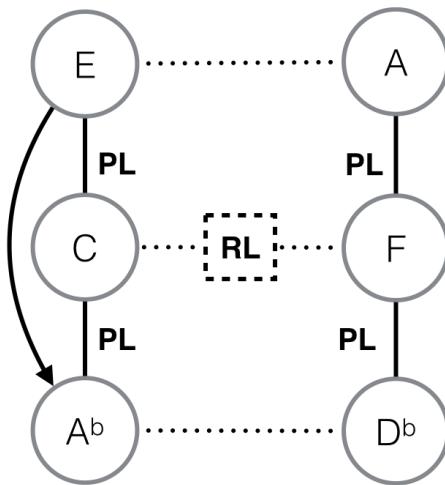


Figure 6.7: ST 2: Enterprise Clears Moorings,
PL network

The cue starts with an exterior shot of the Enterprise. Horner introduces a lydian inspired, slow and majestic theme as the Enterprise lights her external light buoys, preparing to leave the space dock.

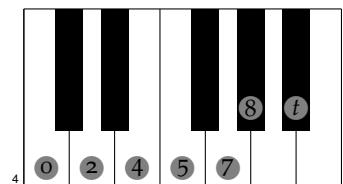
As soon as Kirk and Dr. McCoy enters the bridge, military snare drums and Horner's Star Trek theme plays over a G pedal. Woodwinds and wind chimes provide some lydian glitter just as the theme plays again. Spock is the Captain of the Enterprise and is seen overseeing the final preparations. The theme relies heavily on the mixolydian $\flat 6$ scale⁴ and with it provides the harmonic backdrop.

m.18-19 provides a section of *parallel harmonic displacement*⁵ seemingly unprovoked. It might be a mimicking of Spock, the half human and half Vulcan who is famous for his logic and lack of emotion; though this is pure speculation. In any case, it works as a transition and modulation for the Star Trek theme, now in F, and with an F pedal point until m.29.

Figure 6.7 is a overview of the way Horner uses major thirds as a harmonic roadmap and has been the rule until now. Spock asks Lt. Saavik if she has ever before piloted a starship from the space dock. As she replies, Horner switches to a wondrous feeling *Major Tritone Progression* (MTTP) and hence makes use of his other harmonic road map, the RPRP network, as seen in figure 6.8.

Lt. Saavik accepts the challenge, which is followed by the main theme, and walks to the captain's chair. When walking Horner introduces a theme in A (m.29) which is lydian and familiar in tonality just as the theme in the beginning of the cue; however, this is not a theme but more for providing a sense of wonderment.

Kirk is obviously nervous as Spock orders Lt. Saavik to take the ship out. The Star Trek theme modulates to D and sounds one last time before an accelerando and crescendo raises the excitement, along with Kirk, and hits the point of the Enterprise departing. Horner uses a variation of the sextuplet theme used in the Main Titles. The flurry of



Mixolydian $\flat 6$: pc [0,2,4,5,7,8,T]

⁴ Not unlike what we find in jazz big band traditions, where they are known as *block chords* or *chorale style harmony*.

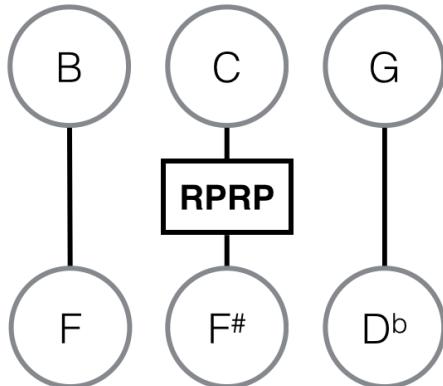


Figure 6.8: ST 2: Enterprise Clears Moorings, RPRP network

notes is backed up by a rising G lydian scale in the lower brass. After another **RPRP**, Horner revisits the Main Titles more, or less, exactly. From letter **I**, Horner has displaced the melody by one beat per what he did during the Main Titles. The chord structure Horner uses are major chords over the E minor scale (figure 6.9).

From **m.67** we return to the bridge and the music turns ominous. Descending and arpeggiated $B^{(\sharp)}$'s with a quite energetic $\hat{3}$ as the root. As with Spock, this seems unmotivated until one considers that working on a spaceship can be quite hazardous. The same descending pattern modulates up a fourth and is now joined by a fanfare that builds until Enterprise enters warp speed where Horner's music does exactly the same. There is a tiny tail where a major sixth is repeated, but the film cuts to a shot of a dark space station and the music turns to a flat 6, perhaps, making a prediction on its future.

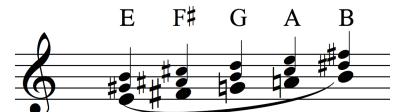


Figure 6.9: ST 2: Enterprise Clears Moorings, Major Chords over the E Minor Scale

*Star Trek II: The Wrath of Khan***Enterprise Clearing the Moorings**

Star Trek II: The Wrath of Khan, (2009) Track 5

James Horner

$\text{♩} = 86$

A

A C/G

6 6 7 6 6 6 6 8 6 6 9 PL LP 10 3 PL LP 11

8va 8va 8va C/G Ab/G C/G Ab/G C/G

6 12 6 13 14 15 16 6

PL LP RLRP PRPR LP

B

C/G B♭ B E♭ F♯m A♭

17 18 3 RP

RL RL RPLP PLP RLPL PRLRP

C F

19 20

PL LP PL

D♭/F F

21 22 23 24 25

RPRP PRPR RPRP PRPR

D

LP

26 27 28 29

PL LP PL LP

D♭/F F D♭/F F A

30 31 32 33 34

3 3 3 3 3

RL

E D/A

35 36 accel. 37 3 str.

38 39 40

3 3 3 3 3

RL

F G

38 39 40

6 6 6 6 6 6 6 6

41 42 43

3 3 3 3 3 3 3 3

LRLP 6 6 6 6 6 6 6 6

F 41 42 43

A 6 6 6 6 6 6 6 6

LP 41 42 43

PRLR

$\downarrow = 103$

G G D \flat G D \flat G **H** C Am/C C A \flat /C

RPRP PRPR 44 45 RL 46 R R PL 47 LP

C Am/C C F#/C E/C C A \flat /C C A C F# C

R R RPRP RLRL PL PL LP RP PR RPRP PRPR LP

I E(\flat 13) E

6 53 6 6 6 6 54 6 55 RLRL

F# E F# G A B

56 LRLR 57 RLRL 58 RLPL 59 RLRL 60 RLRL 61 RL

J E F# E F# G A B Cut in the mix?

62 RLRL 63 RLRL 64 RLRL 65 RLPL 66 RLRL 67 RLRL 68

E/G \sharp

69 70 71 72 73 RL 74

A \flat

6 75 6 76 6 77 6 78 LP

A \flat (\flat 13)

3 82 3 83 3 84 3 85

7

Star Trek VIII: First Contact

Main Title

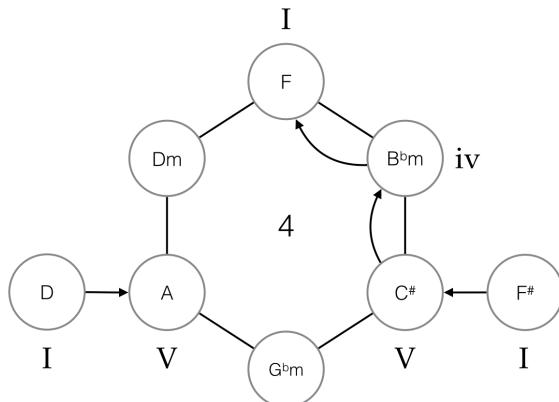


Figure 7.1: ST 8: Introduction

IN DIRECT OPPOSITION to the tone of the movie, the main title of Star Trek: First Contact provides an emotionally charged and inspiring tone. The introduction, figure 7.1, treats us with the Star Trek theme twice, first in D-A and then in F \sharp -C \sharp , quickly moving down through B \flat m to F, which one might describe as a plagal cadence with minor subdominant. The tonal energy in A and B is very much centered around the well established $I - IV - V$ and $vi - IV - ii - V - I$ cycles. From m. 28 Goldsmith executes a modulation to the dominant C and repeats $ii - V$ twice before moving to Cm. He then executes a Aeolian Cadence, figure 7.2, modulating to F major and ending on the dominant C in m.35. The main theme of the cue repeats once more ending with a lydian, “fantastical” sounding progression.



Figure 7.2: Aeolian Cadence

*Star Trek VIII: First Contact***ST 8: First Contact - Main Title**

Star Trek VIII: First Contact Extended (2012), Track 1

Jerry Goldsmith

Harmony $\text{♩} = 67$ D(sus4)/A A

Woodwind

Brass hr.

Strings flaut.

Piano Aux harp timp.

Measure 2: Harmony (staccato 4th), Woodwind (staccato 4th), Brass (hr.), Strings (flaut.), Piano Aux (open 5th). Measure 3: Harmony (staccato 2nd), Woodwind (staccato 2nd), Brass (hr.), Strings (flaut.), Piano Aux (hr.). Measure 4: Harmony (staccato 6th), Woodwind (staccato 6th), Brass (hr.), Strings (flaut.), Piano Aux (hr.). Measure 5: Harmony (staccato 4th), Woodwind (staccato 4th), Brass (hr.), Strings (flaut.), Piano Aux (hr.).

2 3 4 5

Hrm. F \sharp

Br. C \sharp B \flat m F

Str.

Pno. Aux.

Measure 6: Hrm. (staccato 4th), Br. (tr.), Str. (hr.). Measure 7: Hrm. (staccato 2nd), Br. (staccato 3rd), Str. (hr.). Measure 8: Hrm. (staccato 2nd), Br. (staccato 3rd), Str. (hr.). Measure 9: Hrm. (staccato 6th), Br. (staccato 6th), Str. (hr.). Measure 10: Hrm. (staccato 4th), Br. (staccato 4th), Str. (hr.). Measure 11: Hrm. (staccato 4th), Br. (staccato 4th), Str. (hr.).

6 7 8 9 10 11

Cm Cm/B♭ A♭ B♭ C

Hrm. W.W. Str.

v III IV V

32 33 34 35

B F C F F/A B♭ F C F B♭ C Dm Dm/C B♭

Hrm. Str.

I V I Ib IV I V I IV V vi IV

36 37 38 39 40 41

C F G/F F G/F F

Hrm. W.W. Br. Str.

V I II I II I

tr. 3 hr. 3

42 43 44 45 46 47

D **E** D Cm

Hrm. Br. Str.

dream part 1
cluster hitpoints throughout

VI RLRL cluster hitpoints throughout

tr. 3

48 49 50

52

flautando

Hrm.

Str.

53 54 55 56 57

Em cluster

PL vii

53 54 55 56 57

Red Alert

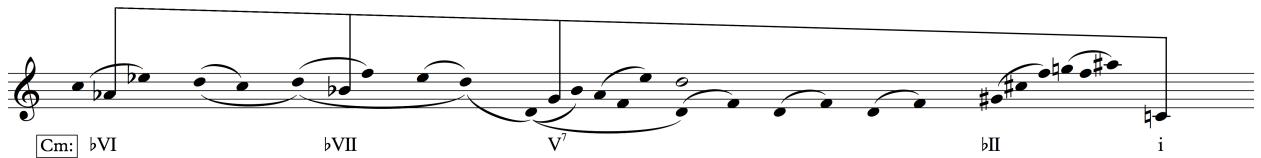


Figure 7.3: ST 8: Red Alert A: Prolonged Aeolian Cadence.

Picard and the crew onboard the Enterprise have just witnessed, by way of audio, the beginning of the Borg attack on earth. Picard is helpless, being several lightyears away. Determined to do something, Picard orders his crew to prepare to enter warp speed toward earth. The main theme of the film plays while Picard orders “all hands” to battle stations. As soon as we see the Enterprise, the Star Trek theme is played, making a quick MTTP to C♯ before landing on m.8: Cm.

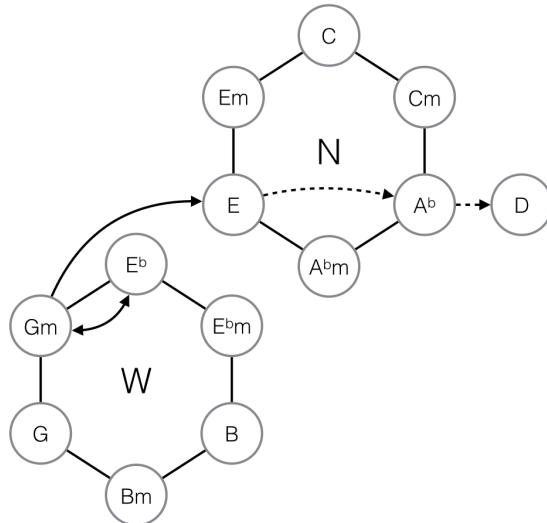


Figure 7.4: ST 8: Red Alert Klingon

The Borg theme plays while a single Borg ship is seen fighting a number of ships from Starfleet. The battle is not unfolding in Starfleet’s favor. We enter the bridge of a badly damaged ship, the USS Defiant. The crew are either dead or heavily injured. All of the sudden, the Klingon theme¹ is heard and we see Worf as he exclaims: ‘Perhaps today *is* a good day to die! Prepare for ramming speed!’ At that very moment, the Enterprise arrives at the battleground and intervenes, shielding the Defiant from the Borg. The music keeps Mickey-mousing, as it were, with the Star Trek theme, which is now playing to signify the presence of USS Enterprise. The theme is played twice and makes a Major Tritone Progression (MTTP) from A♭ to D (figure 7.4).

The scene cuts to the bridge of the Enterprise and the music plays a variant of the Borg theme, m.30. The military snare drum accompanies this part, building more tension as Picard prepares and organizes the rest of the fleet for a joint strike at the Borg ship. As the tension in the scene builds, the music retains the tension by applying a D pedal bass throughout a series of major chords which have their foundation in

¹ written by Jerry Goldsmith for ST:TMP.

the octatonic scale. This builds till part **H**, where the modified Borg theme plays in m.33-39, figure 7.5.

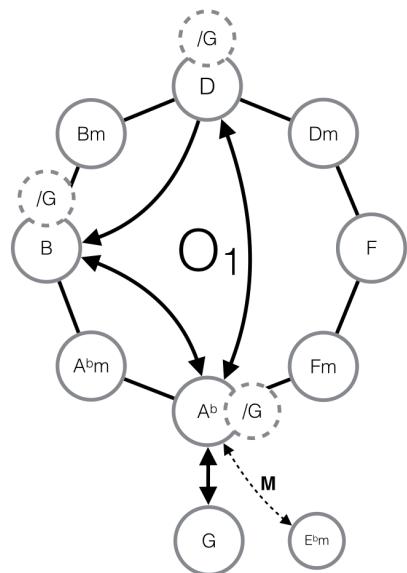


Figure 7.5: ST 8: Red Alert Ending

Red Alert

A Ab

B G

C Cm

D Gm

E A♭

F D

G G/D A♭/D

A musical score for Star Trek VIII: First Contact, page 93. The score consists of two staves of music. The top staff uses a treble clef and has measure numbers 45 through 48 above it. The bottom staff uses a treble clef and has measure numbers 49 through 53 below it. Measure 45 starts with a bass note A♭ followed by a B note. Measure 46 starts with an A♭ note followed by a D note. Measure 47 starts with a D note followed by a B note. Measure 48 starts with an A♭ note. Measure 49 starts with a bass note B. Measure 50 starts with a bass note A. Measure 51 starts with a bass note G. Measure 52 starts with a bass note F. Measure 53 starts with a bass note E. In measure 48, there is a boxed section labeled "H E♭m". The music includes various rests and dynamic markings like forte (f) and piano (p).

Star Trek X: Nemesis

Remus (Main Title)

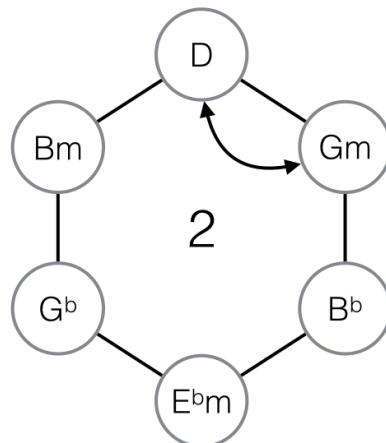


Figure 8.1: ST 10: Main Title Intro 1

THE MUSIC BEGINS with the introduction of the Paramount logo. This time there is a synth and string pad slowly evolving through $\hat{5} - \hat{1} - \hat{5}$ ending on a piercing, sweeping, high-pitch pad over $D^{\triangle 7}$ (figure 8.1). This fades down fairly quickly to a D^5 , which provides the harmonic bed for the melody. The melody starts by ascending two M3's, resting on the fifth, creating an uneasy feeling. The melody uses the fifth mode of melodic minor¹ giving both minor *iv* and *v*.

¹ Mixolydian|b6=[0,2,4,5,7,8,T]

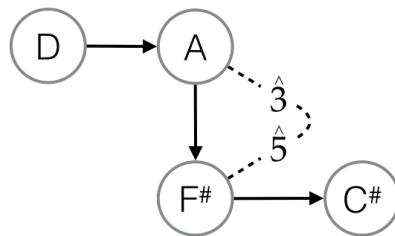


Figure 8.2: ST 10: Main Title Intro 2

In m.10, the famous “Courage” Theme comes to life as the Star Trek title hits the screen. It modulates and repeats as the subtitle “Nemesis” is revealed. The modulation makes a coupling through the $\hat{3}$ of A, making it the new $\hat{5}$ of $F\#$ (figure 8.2).

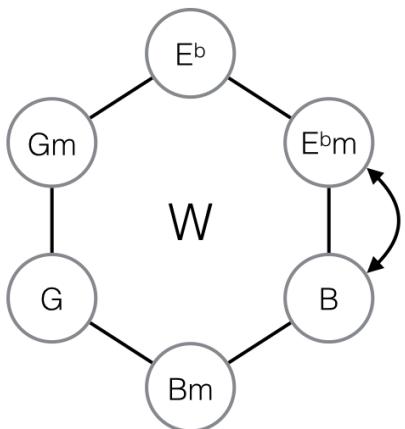


Figure 8.3: ST 10: Main Title A

After a short percussive pattern with military snare drums and timpani, the main theme plays. This happens while we fly toward a number of planets, traveling all the way down to an alien city. Supporting the melody is percussion and a metallic synth, providing an ominous military feeling. The scale is pure minor and the chords alternate between $vi(I) - IV$ (figure 8.3).

As soon as the dialogue starts, the music drops down and an eerie melody plays. The sonority perceived is that of chords built upon [048]'s, thanks to the same Mixolydian \flat 6 used in the introduction.

Star Trek X: Nemesis
ST 10: Nemesis, Remus
 Star Trek Nemesis: The Deluxe Edition (2014), Track 1

Jerry Goldsmith

J = 95

Harmony

Woodwind {

Brass {

Strings {

Piano Aux. {

D

G.mel.min fl.

solo trp.

synth patches

sweeping pad, dissolves to P5

2 3 4

=

Gm/D

Hrm.

W.W. {

Br. {

Str. {

5 6 7 8 9

F#/C#

Hrm.

W.W. {

Br. {

Str. {

10 11 12 13 14 15



C# $\text{♩} = 90$

Hrm.

W.W. {

Br. {

Str. {

Pno. {

Aux. {

16 17 snare 18 19 20

J = 95
E♭m

Hrm.
Br.
Str.

Pno.
Aux.

percussive synth
high toms

temp. 21 22 23



A

Hrm.
Br.
Str.

Pno.
Aux.

B(♯11)

4 6

percussive synth
high toms

temp. 24 25 26 27 28

$E_{\flat}m$

Hrm.

W. W. {

Br. {

Str. {

Pno. {

Aux. {

high toms

3 4

4

29 30 31 32 33



$E(\sharp II)$
Cmaj⁷

Hrm.

W. W. {

Str. {

Pno. {

Aux. {

played in slightly slower tempi, displacing it

34 35 36

Hrm.

W. W.

Str.

Pno.
Aux.

37 38 39 40

Attack Pattern

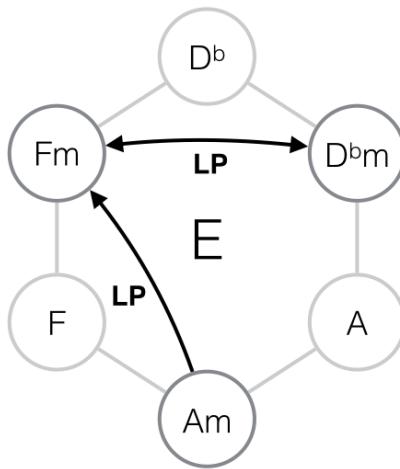


Figure 8.4: ST 10: Attack Pattern, part A, B, C and E

Captain Picard and Lt. Cdr. Data are conversing in the cartography room when they realize they are going to lose long range communications. The music starts at the moment of realization. It is a tension-building, syncopated motif in $\frac{7}{4}$ played by the low strings (figure 8.4). A sweeping synth and horns play the second motif as both Data and Picard realize that this is the moment Shinzon has been waiting for. Picard orders evasive maneuvers, but Shinzon has already begun the attack. The tonality is exclusively octatonic, giving the overall sonority, combined with odd meters, an aggressive and uneasy nature. Enterprise is critically hit and loosing warp capabilities. Shinzon's ship is seen turning around to continue the attack. The musical meters adapt to mickey-mouse the cuts.

The music drops in energy and a new motif enters, **C**, as we cut to the interior of Shinzon's ship where the attack on the Enterprise continues. Picard returns to the bridge and orders retaliation and the music picks up again. Shinzon's ship is cloaked and, ultimately, the Enterprise manages to inflict only minimal damage.

The music, now at letter **C**, introduces a new motif, *motif 3* accompanied by *motif 1*. All in all, it is very subdued and clearly restrained, mirroring the screen as there is a momentary absence of fire. The crew of Enterprise gives reports on current status.

Shinzon plans his ferocious attack, and Goldsmith does the first, and only network modulation, to **Cm** (figure 8.5). From letter **E** the planning evolves, and letter **F** is introduced simultaneously as the attack explodes into action. The battle ends when the Enterprise can take no more; Shinzon hails Picard and the battle ends.

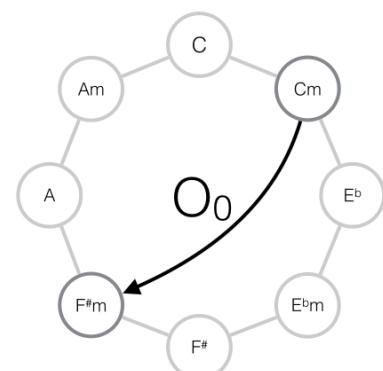
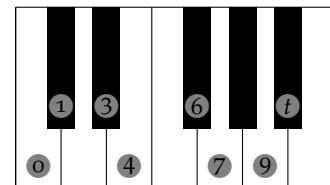


Figure 8.5: ST 10: Attack Pattern, part D and E

Star Trek: Nemesis
Attack Pattern
 Star Trek Nemesis: The Deluxe Edition, (2014), Track 24

Jerry Goldsmith

$\text{♩} = 100$

A

Am *motif 1*

B

Fm

octatonic scale thruout.

C C \sharp m

Fm

D Cm

Am

E

F \sharp m

pattern repeats.

2

F C[#]m

8va

30 31

Fm

b^o

o

32 33

Am

o

o

34 35

36 37 38

9

Star Trek XI: Star Trek

Star Trek

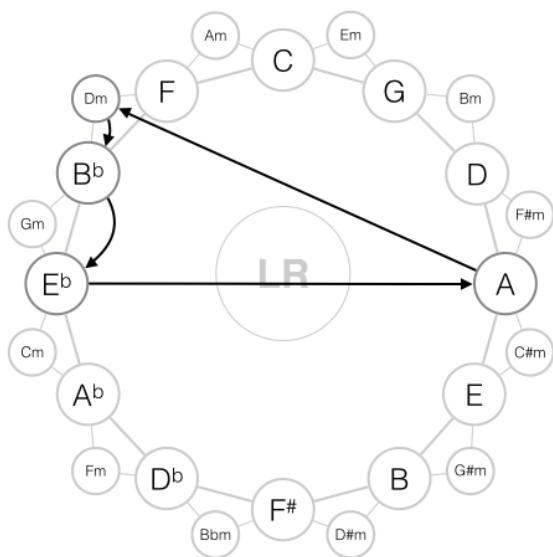


Figure 9.1: ST 11: Star Trek

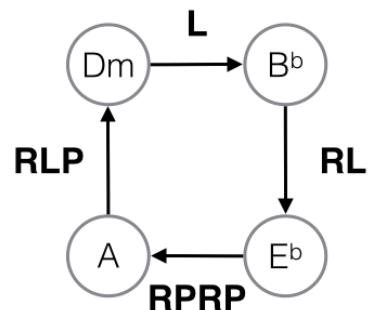


Figure 9.2: ST 11: Star Trek: Transformational Cycle

NOT UNLIKE THE rest of the Star Trek franchise, Star Trek XI begins with a short overture, presenting the main tonality and mood of the coming score. The cue is quite clearly constructed in the circle of fifths, but honoring the “space progression” MTTP. The progression mapped out in Dm follows: $i - \flat VI - \flat II - V$. The sonority is soft but curious, with pads and soft strings supporting the melody. The melody is built upon a simple motif that transforms with the harmony.

With the main theme presented, Giacchino presents the second main theme used throughout¹.



1

*Star Trek XI***Star Trek 11, Star Trek**

Star Trek CD1 (2009), Track 1

Michael Giacchino

Harmony ♩ = 59 Dm B♭ E♭ A Dm

Woodwind

Brass *a1* 3 3 3 3 3 *a1,2*

Strings

Piano Aux. *pad providing harmony*

2 3 4 5 6



Hrm. B♭ E♭ A ♩ = 118 Dm(maj7)

Br. *RL* 3 *RPRP* *RLP*

Str.

Pno. Aux. *harp*

7 8 9 10 11 12

Hrm.

Br.

Str.

Pno.
Aux.

=

Hrm.

Br.

Str.

Pno.
Aux.

13 14 15 16 17 18

clusters, various hitpoints through

gliss till breaking gliss.

19 20 21 22

Main Title

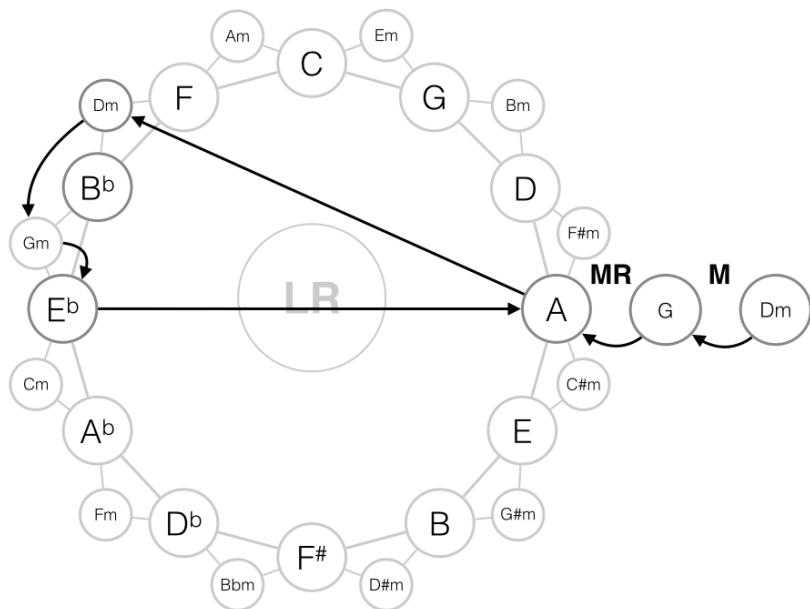


Figure 9.3: ST 11: Main Title

After the action packed encounter with the time traveling Romulans has subsided, the wife of Kirk Senior gives birth to James T. Kirk. The rhythmical motif of Star Trek begins playing while a fluttering flute plays a melody based upon harmonic minor. In essence, this cue is the same as the first. The motifs are the same with the exception of their order; first comes the rhythmical motif, then the main theme is re-harmonized slightly with $i - v$ instead of $i - \flat VI$ and, instead of triplets, the theme is stretched out to quarter-notes.

Star Trek XI
Star Trek 2009 Main Title
 Star Trek CD 1 (2009), Track 6

Michael Giacchino

$\text{♩} = 150$

Dm

1 2 3 4

5 6 7 8 **LRP**

9 10 11 12

13 14 15 16 **RLRP**

17 18 *tuned bass drum solo* 19 20 *tuned bass drum solo* **PLR**

Dm Dm/C Gm/B♭ Gm/A Gm Gm/F **PLR**

E♭ 25 26 **RPRP** 27 **PLR** 28

Dm 29 30 31

Hangar Management

The scene begins after Kirk has been caught cheating on the "Kobayashi Maru" and he is now facing public reprimand. Admiral Barnett gets word that the Vulcan home-planet is under attack and he orders the cadets to report to Hanger One and await ship assignment. The scene shifts to the hanger where hundreds of people and shuttle crafts are preparing to leave. A variant on the new Giacchino Star Trek theme is heard in the french horns, accompanied by marching snare drums, staccato strings and tuned bass drums². The tonality is natural minor, $iii \leftrightarrow vi$, centered around $A\flat$ (figure 9.4). The Barracks Leader³ calls out the cadet assignments. When Kirk notices his name is not called, the music calms to a solo trumpet playing another variation of the new Star Trek theme—this time with a dorian feel. Kirk approaches the barracks leader and asks why his name was not called. The barracks leader informs Kirk that he is on academic suspension, meaning, he is grounded until the academy board's ruling. The music grinds to a halt while McCoy supports Kirk the best he can, but leaves to board the shuttle craft. The new Star Trek theme enters solemnly (figure 9.5) at m.12, signifying Kirk's standing, left behind and alone.

McCoy has a change of mind, however, and the music makes a metric modulation while McCoy doubles back to fetch Kirk: "Come with me!" We now focus on Uhura who is assigned to the USS Farragut. Obviously displeased by this, she storms passed Kirk and McCoy who are discussing: "Bones, where are we going?", "You'll see!" A few strides later she meets Spock, her superior officer, asking why she was not picked out for the USS Enterprise. The music turns sweeter (figure 9.6), with the oboe playing a melody with a slight touch of something tongue-in-cheek, perhaps portraying the ferocious femininity emitting from Uhura as she makes an inarguable case for herself. Spock tries to defend his decision by placing Uhura on the USS Farragut on the basis of "avoiding the appearance of favoritism.". This does not go down well with Uhura who simply states: "No. I'm assigned to the Enterprise.". Spock swiftly and wisely makes an adjustment in the rosters to confirm.

"What are you doing?!" Kirk asks. "I'm doing you a favor." McCoy replies. The music is still calm, but the sonority has changed from dorian to lydian. This gives us the feeling that something wonderful and fantastic is going to happen. And indeed it does; McCoy injects Kirk with a vaccine for some aggressive disease causing Kirk to experience some severe allergic reactions. McCoy drags Kirk to a shuttle craft, and the musical figure modulates from $D\flat$ to E , raising the energy levels (figure 9.7). But instead of a call-and-response, a trumpet now plays hints of the original Star Trek theme. McCoy then invokes protocol and rank to let Kirk join the shuttle craft. At the very end of the sequence, the original Star Trek theme is heard.

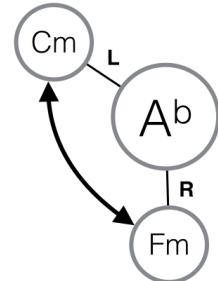


Figure 9.4: ST 11: Hangar Management A

² The movie cue and the CD cue do differ; the movie features taikos to accent the beat whereas the CD track does not.

³ Cameo by **Star Gate** fame "Dr. Carson Beckett": Paul McGillion.

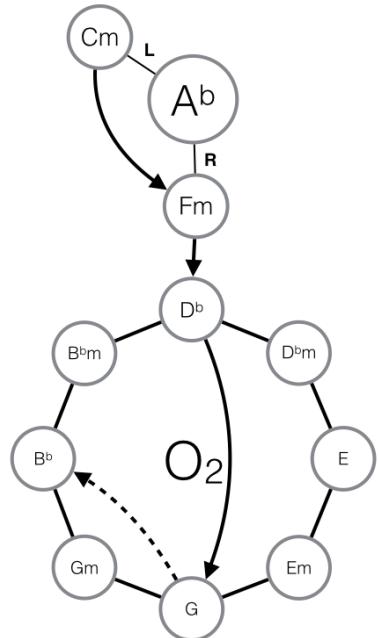


Figure 9.5: ST 11: Hangar Management B

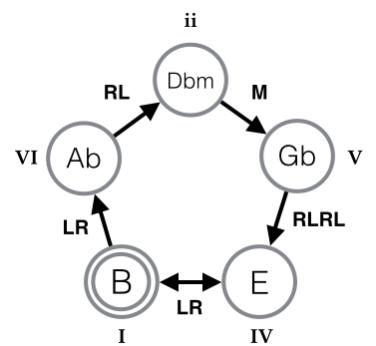


Figure 9.6: ST 11: Hangar Management D

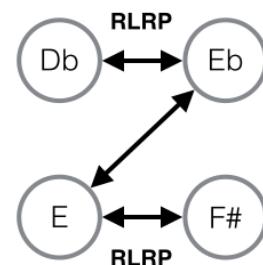


Figure 9.7: ST 11: Hangar Management E

Hangar Maintenance

A $\text{♩} = 73$

Cm Cm⁷ Fm Cm Cm⁷ Fm

Cm F/C Cm

1 2 3 4

5 6 7 8 9

B Cm Cm/B♭

10 11 12 13

Fm/A♭ D♭ D♭/A♭

G 14 15 16 17

18 19 20

C B♭m

21 22 23 24

25 26 27 28

29 30

D D♭m $\text{♩} = \text{♪}$

G♭ E B

31 32 33 34

E B A♭/C D♭m

35 36 37 38

39 40

Musical score for piano, page 112, featuring four staves of music. The score includes measure numbers 41 through 56 and key signatures.

Measure 41: Key signature: $D_b(\sharp^{11})$. The first measure consists of eighth-note chords: D_b , F , A_b , and C .

Measure 42: Key signature: E_b/D_b . The second measure consists of eighth-note chords: E_b , G , B , and D_b .

Measure 43: Key signature: E_b/D_b . The third measure consists of eighth-note chords: E_b , G , B , and D_b .

Measure 44: Key signature: E_b/D_b . The fourth measure consists of eighth-note chords: E_b , G , B , and D_b .

Measure 45: Key signature: $D_b(\sharp^{11})$. The fifth measure consists of eighth-note chords: D_b , F , A_b , and C .

Measure 46: Key signature: $E_b(\text{sus}4)/A_b$. The sixth measure consists of eighth-note chords: E_b , G , B , and A_b .

Measure 47: Key signature: $E(\sharp^{11})$. The seventh measure consists of eighth-note chords: E , G , B , and D .

Measure 48: Key signature: $E(\sharp^{11})$. The eighth measure consists of eighth-note chords: E , G , B , and D .

Measure 49: Key signature: F^\sharp/E . The ninth measure consists of eighth-note chords: F^\sharp , A , C , and E .

Measure 50: Key signature: F^\sharp/E . The tenth measure consists of eighth-note chords: F^\sharp , A , C , and E .

Measure 51: Key signature: $E(\sharp^{11})$. The eleventh measure consists of eighth-note chords: E , G , B , and D .

Measure 52: Key signature: D^5 . The twelfth measure consists of eighth-note chords: D , F , A , and C .

Measure 53: Key signature: F^\sharp/E . The thirteenth measure consists of eighth-note chords: F^\sharp , A , C , and E .

Measure 54: Key signature: F^\sharp/E . The fourteenth measure consists of eighth-note chords: F^\sharp , A , C , and E .

Measure 55: Key signature: F^\sharp/E . The fifteenth measure consists of eighth-note chords: F^\sharp , A , C , and E .

Measure 56: Key signature: D^5 . The sixteenth measure consists of eighth-note chords: D , F , A , and C .

10

Star Trek XII: Into Darkness

Logos

THE MAIN TITLE in Star Trek: Into Darkness is, for all intents and purposes, identical to the “Star Trek” cue in Star Trek XI. What differs is the orchestration, which adds emphasis to the harp and adds the use of a choir.

*Star Trek XII: Into Darkness***Star Trek 12 Main Title**

Star Trek XII: Logos/Pranking the Natives (2013), Track 1

Michael Giacchino

Harmony $\text{♩} = 59$ Dm B♭ E♭ A

Woodwind

Brass *Hrn. a1*

Strings

Piano Aux. *pad providing harmony*

2 3 4 5



Hrm. Dm B♭ E♭ A

Br. *L* *RL* *RPRP* **RLP*

Pno. Aux. +choir 6 7 8 9

$\text{♩} = 118$
 Dm(maj7)

Hrm.
Br.
Str.
Pno.
Aux. *harp*

+chimes

Hrm.
Br.
Str.
Pno.
Aux.

16 17 18 19

Hrm.
Br.
Str.
Pno.
Aux.

Pranking the Natives

temp. +cymb.
sp

20 21 22 23 24

London Falling

This cue starts at approximately 0:16:34 right after Kirk's reprimand. A piano plays an arpeggiated B_bm,(figure 10.1) while a solo oboe plays a simple theme: **theme B**. We see a birds eye view of London. The strings join the arpeggio, steadily intensifying when the main antagonist, Kahn, is using a medical device to extract his own blood into a vial. He places the tube in a container, along with a silver ring and all the while the music crescendos over the same B_bm; all that changes is the thickness of the orchestration and the dynamic.

With *subito piano*, the strings play very lightly in the top register, supporting the solo piano playing **theme A**. We cut to a living room filled with medical equipment. A mother sleeps on the couch and her child is sleeping in what appears to be a hospital bed while the father enters, carrying the container prepared by Kahn. The man locates the vial and places it into a device that extracts the blood and feeds it to the intravenous apparatus. When this happens, the music shifts slightly; the melody is played an octave higher and the strings enter with an arpeggiated ostinato (figure 10.2). A screen showing the girl's vital signs starts blinking and beeping, indicating a positive rise in vital signs. The sad solo piano returns and the pace seems to slow down. The man leans over the sick bed and kisses the girl on the forehead, clearly relieved though something still torments him.

The scene cuts to the busy streets of London. Motif 2 and 3 (figure 10.3) plays simultaneously, creating a driving, ominous tension. The sad piano theme, **theme A**, now played by flute and oboe, plays on top of the driving pattern. The father, in uniform, walks down the streets and sees Kahn on the opposite side of the street. The music intensifies with long held chords, **theme B**, and percussion when we see Kahn. The music de-densifies and a new, slightly chromatic and rhythmically unstable theme, **theme C**, played by oboe, enters as the father passes the security check and enters the elevator.

When we enter the underground research facility, Motif 3 is reinforced by the low strings and percussion as the tension builds. We see the father holding what appears to be a glass of water as he approaches his desk. He sits down and activates his workstation. We get a close-up of the father with tears in his eyes. On the computer we see:



Figure 10.1: London Falling Motif 1



Figure 10.2: London Falling Motif 2



Figure 10.3: London Falling Motif 3

Figure 10.4: ST12: Transmission Sent

We get another close-up, The father, with tears streaming down his face, takes off his silver ring—the ring prepared by Kahn—and drops it into a glass of water. A violent reaction occurs and the entire facility blows up in a high energy explosion.

Giacchino is very economic in his choice of harmony. The tonal center is B_bm, but the chords used have their axiom centered around

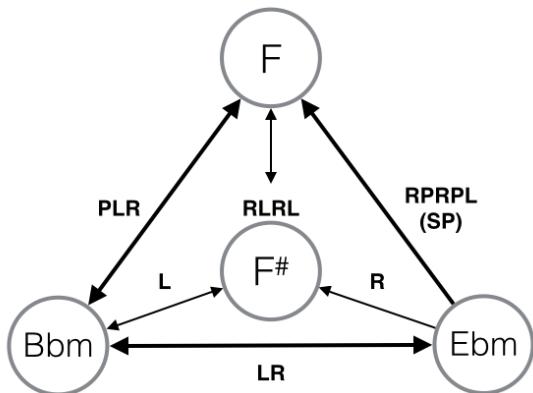


Figure 10.5: ST 12: London Falling

F^\sharp , as closely as possible to the circle of fifths and its minor relatives (figure 10.5). The only exception is F, which is the major dominant in relation to $B_\flat m$. But transformationally, we can see and hear that it feels quite far away tonally.

Star Trek: Into Darkness
London Falling
Star Trek Into Darkness, Deluxe edition 2013, Track 2

Michael Giacchino

B = 105
 B_{bm}

1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
17 18 19 20 21
22

A
 B_{bm}
pno.
sp

23 24 25 26
27 28 29 30
31 32 33 34
35 36 37 38
39 40 41 42
43 44 45 46
47 48 49 50 51
52

E_{bm}

F^{\sharp}

Cut from the movie

$\text{F}^{\sharp}\text{maj7}$

harp gliss

2

Bbm
+str m2 53 54 55 56

F#/A#
F pno. 57 58 59 60

61 62 63 64

A Bbm 65 66 F#/A# 67 Bbm 68

Cut from the movie

69 70 71 simile

m3 72 73 74 75

A fl./obo. 76 77 78 79

sp F# 80 81 82 83

Bbm 84 85 86 87

88 89 90 91 92 93

Bb(sus2) 94 95 96 97

Bb(sus2) 98 99 100 101

B_b(sus2)

102 103 104 105

106 107 108 109 110 111

112 113 114 115

116 117 118 119

120 121 122 123

124 125 126 127 128

molto cresc.

11

The Musical Conventions of Star Trek

I HAVE ONLY scratched the surface regarding the actual musical syntax of Star Trek. I have, however, observed a few things worth noting.

In many ways music can be treated as semantics; certain musical devices has become synonymous with a certain image. Take John Williams "Jaws" theme, or the use of the lydian mode to portrait something "magical". With that in mind, what does the music of Star Trek tells us? It tells us that harmonic progressions are very much a product of thirds. Scales like the lydian, mixolydian $\flat 6$ and the octatonic scale rule supreme in underscores. This in turn tells us that the composers uses more predictable tonal constructs when dealing with music that is in front of the narrative. It also tells us about a gradual harmonic reduction. **ST:TMP** and **The Wrath of Kahn** is a harmonic bonanza compared to that found in **Star Trek (2009)** and **Into Darkness**. It would be easy to draw a line that starts on top of the harmonic complexity scale at 1979, almost modernistic in places, and are quite a bit down the scale in 2013; a gradual decline.

It is logical to assume that *why* the music overall becomes simpler, and perhaps more "efficient" constructs over time is because movies has changed to adapt to new movie audiences that has grown accustomed to "gonzo" entertainment. This might be a case of evolutionistic harmonic redundancy - the audience instinctively knows what to expect after a given amount of musical time therefore the composers skips a bit on the harmonic justification. It is comparable with the jump in conclusions we see from Bach and the baroque music, where every chord had to have a function and was thoroughly justified before executed, and Wagner, who *assumed* the functional logic and jumped straight to the conclusion. Also, this might be as "simple" as drastic cuts in production time leaving the composer bound to produce *something* in a short amount of time, however, I believe it to be a combination of all of the above.

Regarding the inner layers of orchestration we see that the "John Williams" era is transforming into something else; A new direction. We no longer see the exuberant sweeping strings and multiple counterpoints spread throughout the orchestra found in Goldsmith and Horner's work from the 80's and 90's. Instead we see a immensely thick orchestration with lots of instruments doubling each other stating

the music mono thematically.

If we look briefly at the internal musical structures, they has flattened dramatically. The main title of **ST:TMP** uses a variant of the rondo form to build and develop themes. With the main title of **Nemesis**, Goldsmith uses but one theme that he barely develops before hinting at another theme in the end. The main title of **Star Trek (2009)** differs in that it refuses to reuse the old themes further differentiating it self from the franchise. Only hints and homages to progressions are to be found. The main title features two themes, the first one stated twice and the second one, a one bar loop, repeats ad infinitum.

The size of the orchestra has of course evolved but in essence remains much the same; gigantic. **Wrath of Kahn** was recorded with a 91-piece orchestra and **Star Trek (2009)** was recorded with a 107-piece orchestra and 40-person choir. The same goes for the use of synths and other sound effects as part of the score. Goldsmith used several synthesizers and organs to expand his sonority palette, Giacchino uses different synths to add texture as well. The use of non-orchestral textures is evolving along side technology and are providing composers with new tools to express emotions.

12

Conclusion

"MODERN FILM SCORES - THE McDONALD'S OF MUSIC?" was the title I was going to use for my conclusion, with the subheading: "Or the New American Minimalism?". With this statement I wished to convey a rather unpleasant suspicion the film music industry are subject to more and more "fast food music". Is it really so? In some ways I believe proof of this trend have been partially confirmed during the course of this study. There have indeed been a change on how film and music work together and it would seem that it has to do with how the movie industry as whole has changed: lesser time to produce great movies. With the "gonzo" effect I have mentioned before, we see a clear trend of repeating and simplifying musical content and using texture to fill the "quota", so to speak. There would also seem that there is a trend of creating harmonic progressions and content based on the circle of fifths, progressions usually confined to the more popular segment of musical industry. This leads me to the question: On of film musics greatest strengths is its liberty to go *beyond* regular sonorities *because* it is independent of the audience; it is fully and wholly under the power of the screen. But is it so that the current belief is that the more tonally complex, the narrower impact you have on your audience? From my study alone it is impossible to tell. What I *can* tell is that there is less music and more "musical noise coming" from the newer movies. Maybe this is part of the answer of my subtitle; It would seem the musical syntax in current science fiction is following a tendency of less variation and more generalization. But in the end, does it mean anything? Perhaps, if its reason is to submit to the people.

This study has but uncovered an extremely small percentage of the total sum and there is no need to raise the alarms; this is just a early observation and ultimately I am talking about possible trending tendencies. Even so, there is no denying the fact that we do indeed see a trend of declining harmonic and melodic complexity, but there are lots of examples of movie and TV scores that are as diverse, if not more so, as the "old" scores of the industry giants, Korngold, Steiner and Williams, to name but a few. And even the new Star Trek scores: they have parts that are absolutely beautiful. Music are really about patterns and redundancy; certain patterns have stuck with us for a long time when we hear new patterns we are quite skeptical at first. Therefore it

is fair to present a more optimistic view on the matter: Perhaps we are living the paradigm shift we have seen between Baroque and Rococo, Bop and Cool, Serialism and Minimalism? Only time will tell where this is heading.

As a final note I wish to applaud the strengths of *neo-Riemannian Theory*. It has proven a most capable tool for analyzing patterns, and I hope that others will use it as well to explore its boundaries on and beyond.

Live long, and prosper

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Colophon

```
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2 \thispagestyle{empty}
3
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