

Recording the Star Wars Saga

Analysis by Chris Malone

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Recording the Star Wars Saga

Foreword

A very special thank you must go to recording engineer Eric Tomlinson for his candid and invaluable recollections and for providing many previously unpublished photographs. Thank you to assistant engineer Alan Snelling for his photographic memory! Without the enthusiasm and support of these two gentlemen this document would not have been possible and, for that, I am indebted to their special contributions.

Thank you to Bill Wolford of Vivid Sound Productions (www.vividsound.com) for comments about his mastering work on the 1993 CD releases.

As this document is based on known facts together with a good deal of hypothesis it may contain errors. Such errors are most certainly my own and I would be pleased to hear your comments, criticisms and corrections! Or perhaps you have your own **Star Wars** music story to tell. I can be contacted via e-mail at cmalone78@gmail.com or on the web at www.malonedigital.com.

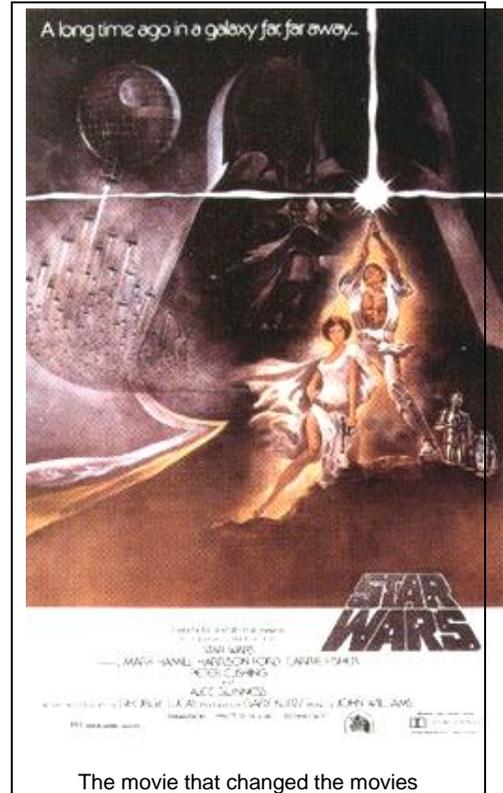
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Introduction

May 2005 marked the 28th anniversary of the release of the original **Star Wars** film to cinemas and the beginning of a worldwide cultural phenomenon that continues to grow in size. The date also marked the release of the sixth and apparently final **Star Wars** film, actually the third in a prequel trilogy series, titled **Revenge of the Sith**.

Looking back, the success of **Star Wars** seems deceptively simple: create a clear-cut tale of good vs. evil; set it in exotic worlds that look lived in; combine it with groundbreaking visual effects; add innovative sound design; and – perhaps most importantly – allow the audience to have fun.

It is with some irony then that initially no film studio in Hollywood would finance the adventures of Luke Skywalker and a battle against the Galactic Empire. Science fiction films were never big money earners and were often expensive to make despite creator-director George Lucas' insistence that his film was instead a fairy-tale set "a long time ago in a galaxy far, far away." Eventually 20th Century-Fox chief, Alan Ladd Jr., decided to finance **Star Wars** not because of the subject matter but because he saw promise in its young filmmaker.



The uncertainty of others to see financial or artistic value in Lucas' vision plagued production of the film. The cast had trouble grasping the confusing, technologically laden dialog and were perturbed with the only feedback their director offered: "*faster, more intense.*" Lucas would often adjust cinematographer Gil Taylor's lighting setups who in turn became infuriated, continually asking the director to disclose what 'look' he actually wanted. Production designer John Barry was also frustrated by the filmmaker's demeaning instructions that disparaged creative input. Post production proved no easier with the first assembly of the film viewed as an unmitigated disaster, requiring new editors to be hired and work at breakneck pace. In addition, many technical obstacles with special visual effects needed to be overcome by John Dykstra's team at great expense. The path to the 25 May 1977 release had been a turbulent one.¹

In many ways a triumph over uncertainty, the success of **Star Wars** is now easy to measure. Seven Academy Awards, huge box office takings and massive merchandising revenues are just part of it. The story, characters and locales swiftly cemented their way into popular culture and have remained steadfast. Even the music. The continued fame of the soundtrack goes no small way to confirm the impact of the score – "*the one part of the film that turned out even better than I thought,*" according to Lucas.²

¹ *Empire of Dreams: The Story of the Star Wars Trilogy*.
Writer. Ed Singer. Dir/Prod. Edith Becker, Kevin Burns. 2004. DVD. Lucasfilm, 2004.

² Jenkins, Garry. *Empire Building – The Remarkable Real Life Story of Star Wars*. Great Britain: Simon & Schuster Ltd, 1997.

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In 1977 the score's influence was probably best measured by the numerous cover versions of the theme that rapidly appeared. Groups ranging from The National Philharmonic Orchestra to Meco offered their versions, which were snapped up by collectors and fans alike. In fact, the Meco version of the *Star Wars* theme reached number one in the US music charts in October 1977 and remained there for two weeks. Today, the popularity of the theme continues with the London Symphony Orchestra offering a special polyphonic version for mobile (cell) phones that is available from their official site.

This document provides a detailed overview of the technical aspects involved in the composition, recording and presentation of the *Star Wars* saga music scores in various consumer formats over the years, including the *Star Wars: A Musical Journey* DVD.

This document is not intended to be a critique of the scores themselves or how they were used in the films. Numerous talented writers have covered this aspect very well elsewhere. Instead, it presents a unique chronicle that acknowledges seldom recognised talents who helped John Williams realise his masterful compositions.

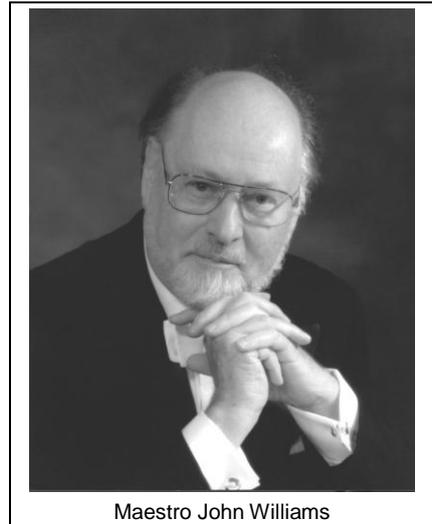


About the Composer – John Williams

John Williams is a household name. A composer crafting themes as instantly recognisable as the films for which they were penned. It is no doubt that some of the most commercially and critically successful films of all time owe a huge debt to the talents of Williams. In fact, as of May 2005, 15 of the 50 highest grossing films of all time were scored by the composer.³

John Towner Williams was born in 1932 and from the age of seven learned piano, trombone, trumpet and clarinet. After completing high school, Williams took piano lessons from Bobby Van Eps and by the age of 19 had composed a piano *sonata*.

Service in the U.S. Air Force during the early 1950s was followed by a year at the Julliard School of Music and then avocation in New York nightclubs as a pianist. His skills drew the attention of 20th Century-Fox music head Alfred Newman who enlisted the musician to play piano on film scores and television programmes during the late 1950s.



Williams' knowledge of orchestration, together with continued encouragement from the older generation of Golden Age composers, led to assignments for TV shows such as *M-Squad* and *Wagon Train*. A series of scores to minor films ensued in the 1960s however it was the commercial and critical success of Mark Rydell's *The Reivers* that also attracted interest in its John Williams score. A young filmmaker called Steven Spielberg, who was also an avid soundtrack collector, took particular note of the score and its composer.

Spielberg and Williams first worked together on *The Sugarland Express* however it was their second collaboration, in 1975, that resulted in massive commercial success for film and score. The two-note *Jaws* *ostinato* for cello has been forever etched into the minds of cinema audiences and is still heard today – hummed by children on beaches in summer. The score, which appropriately balanced moods of great tension, sea faring action and character development, conferred Williams a trifecta of Academy, Golden Globe and Grammy Awards.

Spielberg and Williams have subsequently collaborated for a period of over 30 years – the longest and most successful filmmaker-composer relationship in history. Their collaboration has produced many memorable works including: *Close Encounters of the 3rd Kind*; *Raiders of the Lost Ark*; *ET – The Extra Terrestrial*; and, in more recent years: *Jurassic Park*; *Schindler's List*; *AI – Artificial Intelligence*; and *Catch Me if You Can*.

It was, in fact, Steven Spielberg that advocated John Williams to friend George Lucas, who was preparing a great space adventure in the tradition of serials from the 1930s and swashbucklers such as *The Adventures of Robin Hood*, *The Sea Hawk* and *Kings Row*. Williams used these films as inspiration to craft his own swashbuckling music arranged for large-scale orchestra at a time when symphonic scores were becoming less popular.

Star Wars earned Williams his second Academy Award (for his own composition) and his multi-Platinum double-LP soundtrack eventually sold an unprecedented four million copies worldwide. In terms of sales of symphonic underscore, the *Star Wars* soundtrack was not outsold until James Horner's *Titanic* hit shelves in 1997.

³ *BoxOfficeGuru.com*. 2005. Gitesh Pandya. 25 May 2005.
<<http://www.boxofficeguru.com/blockbusters.htm>>.

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After receiving further critical acclaim for *Close Encounters of the 3rd Kind*, Williams had quickly become the most sought after composer in film. Over the next ten years he proved equally adept at writing for heroic blockbusters such as *Superman*, to smaller pictures including *The Accidental Tourist*, to quirky comedies that included *The Witches of Eastwick*. By the end of the 1980s Williams had probably scored every genre of film with critical and commercial success.

Williams entered the 1990s tackling more serious subject matter such as Oliver Stone's superior *JFK*. Spielberg had also matured producing the emotional and haunting *Schindler's List*. Both director and composer would revisit the intensity of war with *Saving Private Ryan*.

Entering the new millennium, Williams became as in demand and prolific as he had been some 20 years earlier. He ensured thematic consistency for the trilogy of *Star Wars* prequels and wrote memorable music for the ongoing *Harry Potter* series.

Williams acted as resident conductor of The Boston Pops for 12 years, from 1980-1993, and often performed mixtures of classical and film music during capacity concerts.

By August 2004, with the passing of Jerry Goldsmith, David Raksin and Elmer Bernstein, John Williams became the film music grandfather, continuing to actively work despite having entered his 4th decade of film work. His scores have touched millions and the notes for his instantly recognisable themes are penned with indelible ink into the minds of both child and adult alike.

Who can imagine *Star Wars* without its swashbuckling music? Indiana Jones without his heroic theme? Seeing a shark on television without thinking of the *Jaws* *ostinato*? John Williams and his music are both truly part of the public lexicon.

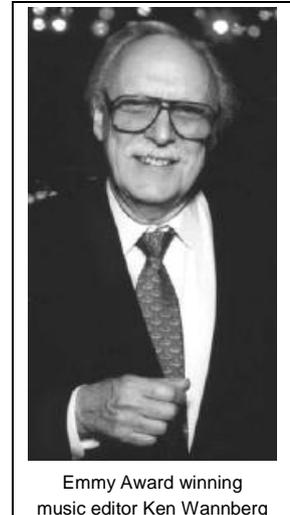
About the Music Editor – Ken Wannberg

Kenneth Wannberg was born in California in 1930 and began playing piano from the age of five, taking formal lessons by the time he was in his teens. Service in the U.S. Air Force enabled Wannberg to develop skills writing music and conducting orchestral ensembles.

After leaving the Air Force, Wannberg commenced employment at 20th Century-Fox as an apprentice music editor. A series of assignments followed and, in 1959, Wannberg was promoted to music editor on Bernard Herrmann's *Journey to the Center of the Earth*. John Williams and Wannberg first collaborated on the 1967 film *Valley of the Dolls* and Wannberg was the composer's music editor of choice until retirement.

In between his duties as music editor, Ken Wannberg also composed his own scores to 15 films including: *The Amateur*, *Mother Lode*, *The Philadelphia Experiment*, and *Draw!* In 1986 Wannberg was awarded an Emmy for "Outstanding Sound Editing for a Series" recognising his contribution, with others, for the television series *Amazing Stories*.

In 2002 Wannberg was honoured by the USC, recognising his contribution to film, with a chair in the "Art of Music Editing" named after him. Looking back on a career that includes *M*A*S*H*, *Hello Dolly*, *The French Connection*, *Joe Versus the Volcano*, most of John Williams scores as well as his own film compositions, Wannberg remarked, "*I can't think of anything else I'd rather have spent a lifetime doing.*"⁴



⁴ "In Motion. Winter 2003." *USC School of Cinema-Television*. 2003. University of Southern California. 11 Jun. 2005. <http://www.cntv.usc.edu/documents/inmotion_winter03.pdf>.

Composing the Original Trilogy

In 1977, decisions regarding musical accompaniment for **Star Wars** just seemed like another necessary detail to bring the over-budget 11 million-dollar film to audiences. Initially, George Lucas considered applying classical music and felt that an approach of utilising well known pieces, similar to that achieved for **2001: A Space Odyssey**, might be appropriate.

Williams knew the importance of a score that connected with viewers, especially during scenes of outlandish creatures and heroic action. The composer fancied the film as a grand space opera with strong themes of good versus evil and so it was agreed that an operatic approach, using the *leitmotif* technique, should be adopted. Classical composer Richard Wagner was most associated with the *leitmotif* approach, one of employing a melody or chord progression to signify a character, emotion or locale. Wagner's four-opera *Ring Cycle* is perhaps the best-known classical use of *leitmotif* and Williams has certainly acknowledged the influence.



X-Wings prepare for the trench run as Williams records his Walton (**Battle of Britain**) inspired cue with the London Symphony Orchestra

Classical composer Richard Wagner was most associated with the *leitmotif* approach, one of employing a melody or chord progression to signify a character, emotion or locale. Wagner's four-opera *Ring Cycle* is perhaps the best-known classical use of *leitmotif* and Williams has certainly acknowledged the influence.

"It was not music that might describe terra incognita but the opposite of that, music that would put us in touch with very familiar and remembered emotions, which for me as a musician translated into the use of a 19th century operatic idiom, if you like, Wagner and this sort of thing. These sorts of influences would put us in touch with remembered theatrical experiences as well – all western experiences to be sure," articulated Williams looking back on the score some 20 years later, in 1997. ⁵

When editing a film, a temporary music score is often used to gain a feel for rhythm, pacing and to provide a composer with the mood a director desires to be conveyed in music. During editing of **Star Wars**, cues from **King's Row**, **The Adventures of Robin Hood**, **Ben-Hur**, **The Battle of Britain**, **Prince Valiant** and **The Bride of Frankenstein**, together with classical music by Holst, Tchaikovsky, Dvořák, Bartók and Elgar, was either directly used or cited to communicate the right musical feelings. Williams saw the temporary music track as inspiration to develop his own swashbuckling music that embraced the brassy and heroic sound of film composer Erich Wolfgang Korngold's 1930s and 40s films for Warner Brothers, in particular **King's Row**.

After settling on an approach, the completed film was spotted for music by Williams, Lucas and music editor Ken Wannberg. The composer was offered six weeks to craft his score. Despite comments to the contrary, in keeping with his preferred working method, Williams chose not to review the script. *"I remember seeing the film and reacting to its atmospheres and energies and rhythms. That for me is always the best way to pick up a film – from the visual image itself and without any preconceptions that might have been put there by the script."* ⁶

In the July 1978 issue of *Films and Filming*, Williams explained that he preferred to muse at the piano and develop thematic material from cue-sheets that accurately specified timings. The composer commenced his score by crafting motifs for: The Force; Luke Skywalker; Princess Leia; the "little people" (Jawas); a heroic fanfare for the Rebel alliance; and a menacing theme for the Imperial troopers. The motifs were subsequently realised for certain instruments, for example: The Force theme was typically set wistfully for cor anglais or french horn; Princess Leia's theme gently rendered on flute; and the rebel fanfare blasted out by trombones and trumpets at their uppermost registers. ⁷

⁵ Byrd, Craig L. "John Williams." *Feature Articles*. (n.d.) *Film Score Monthly*. 11 Jun. 2005. <<http://www.filmscoremonthly.com/features/williams.asp>>.

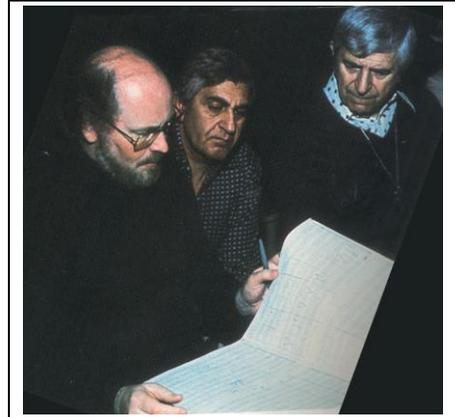
⁶ Byrd, Craig L. "John Williams." *Feature Articles*. (n.d.) *Film Score Monthly*. 11 Jun. 2005. <<http://www.filmscoremonthly.com/features/williams.asp>>.

⁷ Elley, Derek. "John Williams." *The Film Composer*: 3. *Films and Filming*. Jul. 1978: 20-24.

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The main themes were then placed at appropriate moments within the film and further illustrated for symphony orchestra comprising: 26 violins; 10 violas; 10 cellos; 6 basses; 11 woodwinds; 8 horns; 4 trumpets; 3 trombones; 2 tubas; 2 harps; 3 percussion; timpani; piano; and celeste.⁸

Long-time working partner, Herbert W. Spencer, performed the orchestrations by converting Williams' multi-stave manuscripts into music sheets for each member of the orchestra. Due to the huge scope of the score, some 88 minutes, Arthur Morton, Angela Morley, Al Woodbury, Alexander Courage and Williams himself assisted in this time-consuming and exacting task.⁹ The completed score totalled some 800 pages of sheet music of which around two-thirds were orchestrated by Herbert Spencer, who received contractual credit for the work.



Composer John Williams reviews his *Star Wars* score with Emil Newman and recording supervisor Lionel Newman

In addition to the symphonic underscore, Williams fashioned two pieces of source music for the alien-bar sequence at the Mos Eisley spaceport. Initially, music was going to be pre-recorded for playback during filming however Lucas found existing music that provided the necessary rhythm. During scoring, it was Lucas that provided Williams with the inspiration he needed: *"Can you imagine, several creatures in a future century finding some 1930's Benny Goodman swing band music in a time capsule or under a rock someplace - and how they might attempt to interpret it?"*¹⁰ The two "Cantina Band" cues were composed for a jazz combo that included: two saxophones; trumpet; clarinet; Fender Rhodes piano; steel drums; drum kit; percussion; and an Arp synthesiser.

For *The Empire Strikes Back* Williams saw a new challenge. *"I wanted to try and develop material that would wed with the original and sound like part of an organic whole: something different, something new, but an extension of what already existed,"* explained the composer.¹¹ Having successfully established a musical voice for the *Star Wars* universe, Williams continued his use of *leitmotif* and the romantic idiom introducing new themes for: the diminutive Yoda; the blossoming romance between Princess Leia and Han Solo; Lando Calrissian's city in the clouds; and, most notably, Darth Vader. Vader's theme is represented by an ominous major-minor, triplet-like march, scored mainly for brass.

Orchestrator Herbert Spencer and music editor Ken Wannberg both returned to assist Williams in his scoring duties as did orchestrator Angela Morley from the first film and *Superman*.¹² 117 minutes of music was composed for the London Symphony Orchestra in configurations that ranged from 60 to over 100 players depending on the cue. Additional woodwinds, percussion and harps were added for the snow battle sequences on the ice planet of Hoth. Synthesisers augmented the orchestra for the first time in the series (for the dramatic underscore) and were used most prominently during the conflicts between Luke Skywalker and Darth Vader. (Some of this music was dropped from the finished film.) A wordless female chorus provided ethereal accompaniment to the arrival of the Millennium Falcon at the city in the clouds.

The completed score for *The Empire Strikes Back* is justifiably considered one of the great achievements in film scoring one that in some ways topped its predecessor.

⁸ Gerhardt, Charles. "Liner notes." *Close Encounters of the Third Kind / Star Wars*. RCA Victor 2698-2-RG. 1989.

⁹ Elley, Derek. "John Williams." *The Film Composer: 3. Films and Filming*. Jul. 1978: 20-24.

¹⁰ Lippincott, Charles. "Liner notes." *Star Wars – Original Motion Picture Soundtrack*. 20th Century Fox 09026-68746-2. 1977.

¹¹ Arnold, Alan. "Liner notes." *The Empire Strikes Back – Original Motion Picture Soundtrack*. RSO Records RS2.4201. 1980.

¹² "Career Autobiography of Angela Morley." *Angela Morley Official Web Site*. 2005. Angela Morley. 11 Jun. 2005. <<http://www.angelamorley.com/site/bio.htm>>.

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Return of the Jedi was originally slated as the last of the *Star Wars* films and for it Williams continued to extend his anthology of music with new themes for: the sturdy little Ewoks; brother and sister, Luke and Leia; the grotesque Jabba the Hutt; and the evil Emperor Palpatine for which he set a malevolent, wordless male chorus in low registers.

Chief orchestrator Herbert Spencer returned together with newcomer Thomas Newman, son of Alfred Newman and himself an aspiring composer. Williams also enlisted assistance from others to help by adjusting timings of cues to suit new edits as his schedule increasingly dwindled. Fred Steiner was among those that assisted and came with suitable experience having previously composed *Star Trek*

television scores, assisted Jerry Goldsmith on the first *Star Trek* film and recently recorded reconstructions of Max Steiner's *King Kong* music. ¹³ *"I can produce, maximum, probably a couple of minutes of music a day, depending on how dense it is and how much detail there is,"* explained Williams on the pressures of writing to a deadline. ¹⁴ The full score for *Return of the Jedi* runs over 2½ hours and contains two versions of the "Sail Barge Assault" cue (titled "The Return of the Jedi" on some albums) together with concert arrangements of the: Ewok; Luke and Leia; and Jabba the Hutt themes.

A musical number titled "Lapti Nek" was written for a dance sequence at the court of Jabba the Hutt. Unlike the "Cantina Band" music from *Star Wars*, this piece included lyrics which were written in Huttese by Annie Arbogast. [Refer to [Appendix C](#).] The composition was arranged by Williams together with his song-writing son, Joseph, and Ernie Fosellius. By the time *Return of the Jedi* was scored, Joseph Williams had previously written two source cues for Brian DePalma's *The Fury* underscored by his father. Born in 1960, Joseph Williams would later become lead singer of the popular band Toto (from 1986-1990) and today composes television and film scores of his own. ¹⁵

Another "Lapti Nek" type source cue (sans lyrics), as well as a baroque flavoured piece, were also written for scenes at the court of Jabba the Hutt. Both of these were heard at length in the film. Two additional source cues were composed for sequences toward the end of the film. The first was used when Han, Luke and Chewbacca are to be served at an Ewok banquet; the second when the Ewoks celebrate the induction of the Rebels into their tribe.

The defeat of the Galactic Empire required celebratory music to accompany scenes of the main characters rejoicing with Ewoks on the moon of Endor. A light-hearted, percussive finale titled "Ewok Celebration" was composed to combine with a traditional presentation of thematic material for the end credits. Lyrics for the "Ewok Celebration" were written in English by Joseph Williams and translated into Ewokese by sound designer Ben Burtt. Two versions were scored, one with Ewok adlibs and the other (used in the film) a more straight forward presentation with choir performing Ewokese and then the English lyrics. [Refer to [Appendix C](#) for lyrics.]



Recording *Star Wars* at Anvil Studios in 1977

Rear row: Music copyist Ernie Lockett, orchestrator Alexander Courage, music editor Ken Wannberg

Front row: Principal orchestrator Herbert Spencer, composer John Williams, recording supervisor Lionel Newman

¹³ "STARSHIP TROOPERS 2." *Film Score Monthly Message Board*. 28 Apr. 2004. John Morgan. 11 Jun. 2005. <<http://www.filmscoremonthly.com/board/posts.asp?threadID=19613&forumID=1>>.

¹⁴ "Williams: 'Star Wars' score a challenge." *The State.com*. 2005. Martin Steinberg. 13 Aug. 2005. <<http://www.thestate.com/mld/thestate/entertainment/11620931.htm>>.

¹⁵ "Joseph Stanley Williams." *The Gorfaine/Schwartz Agency, Inc.* 2005. 13 Aug 2005. <<http://www.gsamusic.com/Composers/WILLIAMJ.pdf>>.

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For the 1997 Special Edition of *Return of the Jedi*, Lucas heavily reconfigured the “*Lapti Nek*” sequence and created an entirely new celebration scene, incorporating existing footage, for the finale. New music was required for both sequences whereas all other adjustments were handled by Ken Wannberg. Williams composed a new “*Victory Celebration*” in 1996 whilst trumpeter and jazz musician Jerry Hey wrote the “*Lapti Nek*” replacement titled “*Jedi Rocks*.”

It is possible that a replacement for the “*Ewok Celebration*” was sought closer to the film’s original 1983 release. Paul J. de Benedictis revealed to interviewer Linda Jacobson that he composed a demo for the final sequence. “*Apparently Lucas wanted to hear some other ideas than what John Williams had come up with. Three of us in the San Francisco Synthesizer Ensemble got to write a sketch for the cue.*”¹⁶



Studying the *Star Wars* score in the control room at Anvil during March 1977

¹⁶ “Back in the Day: Silicon Valley & Music” - An Interview with Paul J. de Benedictis. n.d. Linda Jacobson. 13 Oct. 2009. <http://www.pdbmusic.com/interview_pauldb2.html>.

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Star Wars

“My greatest joy is always the first day of the recording session. All of the brain busting, back-straining labor of writing the music is behind one and all of the difficulties of dubbing and assimilation of the score to the soundtrack has yet to happen and is ahead of you. There’s a moment of exhilaration and pure pleasure in just performing the music and hearing the orchestra play it. That’s the high point I think for most composers,” expressed John Williams when asked about conducting in 1995.¹⁷

Star Wars and **The Empire Strikes Back** were recorded at the Anvil Film and Recording Group Ltd located in the Korda Studios complex at North Orbital Road, Denham, Buckinghamshire.



Music recording engineer Eric Tomlinson
Tomlinson has recorded 200 scores for many composers including John Barry, Jerry Goldsmith, Maurice Jarre, Henry Mancini, Basil Poledouris and John Williams

The “Stage One Music Theatre” was first opened in 1946 and designed by Cyril Crowhurst who was, at the time, the chief sound recordist and engineer at the Denham Studios. The music scoring stage was modernised and commercialised in 1967 by veteran film music recordist Ken Cameron together with Eric Tomlinson and re-recording mixers Ken Scrivener and Ken Somerville. With Cameron managing the studio and Tomlinson engineering, Anvil quickly attracted many clients from abroad including Jerry Goldsmith, Maurice Jarre and John Williams.

By the time **Star Wars** was scored, Eric Tomlinson had accrued over 15 years experience recording film music. In 1959 he joined the original Cine-Tele Sound (CTS) Studios in Bayswater, London. At CTS, Tomlinson expertly recorded many scores – in particular those of composer John Barry – for films including: **From Russia with Love**; **Zulu**; **Goldfinger**; **The Knack**; **The IPCRESS File**; **Thunderball**; **The Chase**; and **Born Free**. It was at Anvil that Tomlinson would further develop his world-renowned reputation as a music scoring mixer. The following link provides an overview of Eric Tomlinson’s extensive career in music: www.malonedigital.com.

Despite John Williams having previously scored **Jane Eyre** and **Fiddler on the Roof** at Anvil, it was not necessarily a given that the composer would return for **Star Wars**. *“I went to America and I met the guys out there and actually got the film,”* explained Tomlinson of the process of luring the production to Anvil. *“John Richards was hoping to get it at CTS [in Wembley]. Luckily I got it.”*¹⁸



John Williams conducts the LSO at Anvil Studios

The Anvil scoring stage possessed a clear and well-defined ambience with dimensions of approximately 65 feet across, 80 feet deep and 50 feet high.¹⁹ Orchestras of up to 120 players could comfortably fit within the space. The studio included two isolation booths and an electro-acoustic echo chamber located to one side. The control room was located behind the scoring stage with film projected to a 34 foot screen on the far wall of the studio to enable the conductor to synchronise music with the on screen images.

¹⁷ Kendall, Lukas. “On Conducting.” *Raiders of the Lost Ark liner notes*. DZS-090. 1995.

¹⁸ Malone, Chris. Interview. 10 Jul. 2005.

¹⁹ Malone, Chris. Interview. 29 May 2005.

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The studio was readied for recording in half a day during which approximately 23 microphones were carefully positioned at distances ranging from two to ten feet from instruments. Alan Snelling was Eric Tomlinson's assistant from 1975 to 1979 and recounted "*Eric's order of the day*" for miking **Star Wars**, which included many Neumann and Telefunken tube condenser microphones – see side bar.²⁰ It was this choice together with prudent placement and Tomlinson's wide stereo panning that gave **Star Wars** and the Anvil recordings from the 1970s their distinctive sound.

Eric Tomlinson's miking choice for Star Wars	
Violins	Neumann U87
Violas	Neumann U84
Celli	Telefunken 251
Basses	Telefunken 250
Woodwinds	Neumann U84
Trumpets	RCA Ribbon 44
Trombones	Neumann U67
Horns	RCA Bombs
Tuba	Neumann U84
Percussion	Assorted dynamic mikes

The mixing console in use during the **Star Wars** sessions was an original Rupert Neve, with 24 inputs and 16 direct outputs, manufactured for Anvil in 1968. The console utilised German-made EMT linear faders and 45mm channel amplifier modules. Equalisation was only used "*very, very slightly, not a lot,*" according to Tomlinson and dynamics processing avoided completely. "*I don't think I've ever used compression.*"²¹ Despite an avoidance of compression and limiting the engineer related that, as they were recording entirely in the analog domain, setting levels a few dB hotter than normal produced an appealing sound. "*John Williams and I had a gag. Where it says on the VU [Volume Unit] meters 'VU' he used to say 'let's have a bit of voo-voo land.' Just get into the red to give it that edge, a little bit of crispness.*"²²

Live mixes were made in a left, centre, right (LCR) configuration to two 35mm magnetic film recorders, both encoded with Dolby A-type noise reduction. Peter Gray was the sound camera man who operated the RCA magnetic film machines. The recording was monitored through Tannoy speakers powered by individual 100 watt Radford amplifiers. Alan Snelling recalled that the three-channel film mix was also routed to tracks 1-3 of a Studer A80 16-track 2" recorder, also encoded with Dolby A. Major sections of the orchestra were isolated on tracks 4-15 and a 50 Hz pilot tone allocated to track 16 for synchronisation with the motion picture. "*I remember this so well,*" reflected Alan Snelling with great fondness, "*because I pressed that record button to record the 'Main Titles.'*"²³

The recording sessions took place in March 1977, over a period of 8 days, with three 3-hour sessions per day. As is common in film score recordings, the music was recorded out of sequence compared with the narrative of the film. A cue heard midway through the score, (titled "*Chasm Crossfire*" on the 1997 Special Edition CDs) as Luke Skywalker and Princess Leia heroically swing across a gulf within the Death Star, was the first to be recorded on Saturday 3 March 1977.²⁴ The "*Main Title*" was also recorded during this first day with five, now historic, takes made. At the commencement of the 3rd take a musician can be heard remarking "*got a good film.*" The two "*Cantina Band*" cues were recorded on day four, Thursday 10 March 1977.



The London Symphony Orchestra performs the **Star Wars** saga scores under the direction of composer John Williams

²⁰ Malone, Chris. Interview. 29 May 2005.

²¹ Malone, Chris. Interview. 10 Jul. 2005.

²² Malone, Chris. Interview. 10 Jul. 2005.

²³ Malone, Chris. Interview. 29 May 2005.

²⁴ Matessino, Michael. "Recording Log." *Star Wars Special Edition – Original Sountrack*. RCA Victor 09026-68746-2. 1997.

Recording the Star Wars Saga

It was during recording that Eric Tomlinson snatched his first glimpse of the scenes that music would accompany. “You only see sections of it but even so, the sections we saw I thought ‘Wow! This is pretty remarkable stuff.’”²⁵

Eric Tomlinson observed that Williams was the essence of calm professionalism during sessions. After rehearsing a cue the composer would signal the control room, “Ready, Dr. T?”²⁶ Generally, each cue was recorded three to five times with decisions to retake coming from Williams, Tomlinson or recording supervisor Lionel Newman.

Born in 1916, Newman was brother of legendary composer and Fox music head, Alfred Newman, and was hired by the studio in 1943 as a session pianist. A composer in his own right, Lionel Newman was better known in his role as music supervisor, arranger or conductor for over 200 film scores. He would remain linked with 20th Century-Fox until just prior to his passing in 1989.²⁷ With a Young Musicians Foundation conducting scholarship now named after him, Newman was an ideal recording supervisor for *Star Wars* providing valuable assistance to Williams and Wannberg.

Lionel Newman was also a practical joker and the toilets were the domain of many pranks. On one occasion, Newman dropped a handful of ice cubes into the urinal with a shudder claiming that a night of heavy drinking was responsible. On other occasions he would wash but not dry his hands and patiently wait for the next person to enter. Newman greeted his unsuspecting victim with a wet handshake much to the recipient’s disgust. Ken Wannberg drew cartoons during less hectic moments of the recording process. Many of these featured the adventures of Tomlinson and side-kick Snelling, rendered in blue and red ball point pen.²⁸

After scoring was completed the best takes from one of the 35mm magnetic recorders were edited by Ken Wannberg on a moviola. The 16-track tapes were also spliced with exactly the same edits for backup purposes and for preparation of the soundtrack album. Principally, the final edited cues were a combination of two or three different takes. Wannberg subsequently assimilated the score to film with lead music re-recording mixer Don MacDougall. The dubbing crew also included Ray West, balancing dialog, and Bob Minkler, balancing effects, and worked nights from 7pm to 7am each day at the Samuel Goldwyn Studios in West Hollywood.²⁹

To open *Star Wars* a musical prelude was used, the “20th Century-Fox Fanfare” with its “Cinemascope Extension” as composed by Alfred Newman. *Star Wars* was one of the first films to be released in Dolby Stereo and so a stereo version of the Fanfare was sought. A master recording could not be located and as a result the piece was copied directly off the four-track soundtrack to *River of No Return* and mixed to two-channel stereo.³⁰ It proved an inspired choice as, not only were both the *Star Wars* “Main Title” and “Fox Fanfare” composed in the key of *B flat major*, the difference in sound quality from the 1954 recording of the “Fox Fanfare” to the dynamic and powerful recording of the *Star Wars* music ensured audiences would be in for an aural treat.



A jovial atmosphere

Rear row: Music copyist Ernie Locket, composer John Williams, recording supervisor Lionel Newman and producer Gary Kurtz.
Front row: Engineer Eric Tomlinson and director George Lucas

²⁵ Malone, Chris. Interview. 10 Jul. 2005.

²⁶ Malone, Chris. Interview. 18 Jan. 2007.

²⁷ “Lionel Newman.” *The Internet Movie Database*. 2005. 11 Jun. 2005.
<<http://www.imdb.com/name/nm0006213/maindetails>>.

²⁸ Malone, Chris. Interview. 18 Jan. 2007.

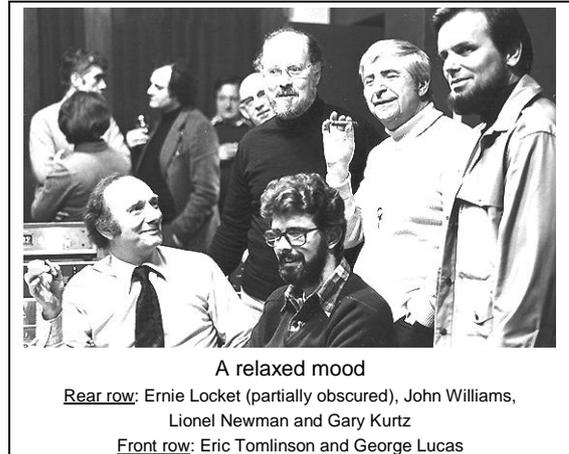
²⁹ “May the Sound Be with You” *The Motion Picture Editors Guild*. 2007. Michael Kunkes. 12 Aug. 2009.
<<http://www.mixonline.com>>.

³⁰ “Mix Magazine Online – Larry Blake” *Mix Magazine*. 2005. Primedia Business Magazines and Media. 11 Jun. 2005.
<<http://www.mixonline.com>>.

Recording the Star Wars Saga

"I remember going to the cinema, not on the premiere but there was a studio showing in the West End of London, and we all stood up and cheered when the opening titles came on," reflected Tomlinson warmly. *"It nearly blew us out of our seats, it sounded magnificent."*³¹

Williams prepared his soundtrack album at the Warner Burbank Studios Groves-Rice complex with senior engineer John Neal. John Alfred Neal (died 2009 Ventura) was a veteran mixer and technologist. He patented time-period modulating (TPM) sound transmission – a forerunner digital broadcast methods in place today.³²



Ted Keep co-founded Liberty Records, benefitted from a Grammy Award winning career, innovated synthesised audio technologies, recorded *Alvin and the Chipmunks* and was the namesake of "Theodore" in the group. Keep engineered John Williams' scores to *The Towering Inferno* and *Jaws* at 20th Century-Fox whereas John Neal engineered the album re-recording for the latter score at the Burbank studios and would soon record *Close Encounters of the 3rd Kind* there. Neal would succeed Keep as resident engineer at the Fox scoring stage.

Williams carefully selected and edited 74 minutes from his 88 minute *Star Wars* score by cross-fading cues and presenting a memorable listening experience that often avoided strict chronological order in favour of musical diversity. John Neal adjusted the sound for home phonograph technology of the time. Stereo image was periodically refocussed, reverberation added and a forward bass-shy equalisation applied. It is surmised that reverb was employed to cover analog splices, mask studio noises and reposition the soundstage at a further perspective to account for the difference between cinema and home listening environments.

Although important, today John Neal's contribution to the original album might better be referred to as editing and mastering rather than a complex remix. *"I did the mixing on everything for the film down to three-track,"* confirmed Eric Tomlinson. *"So it's just a matter of transferring that three-track straight across – and diminishing the centre track a little bit – and you've got your two-track."*³³ The author also expresses his concerns of the frequent misuse of the term "remix" in sleeve notes for albums – when working from three-channel material the process should ideally be referred to as "transferring" or performing a "reduction."

The reduction here does not always present a level balance between the three channels – stereo image has been narrowed periodically to draw focus to a particular solo. For example, the french horn statement of Luke's theme at the conclusion of *"The Robot Auction"* emanates predominately from the centre compared with left of image on subsequent reissues and within the film itself. Generally, the left channel has a slightly elevated level in relation to subsequent releases and this is most evident in *"Ben's Death."*

Originally, the Fox record division, 20th Century Records, prohibited the release of the soundtrack unless any potential losses were underwritten should the record fail to find an audience.³⁴ It was only with this assurance that the double-LP album was released. Limited quantities were pressed and issued in June 1977 however in a matter of days some 200,000 copies were sold.

³¹ Malone, Chris. Interview. 10 Jul. 2005.

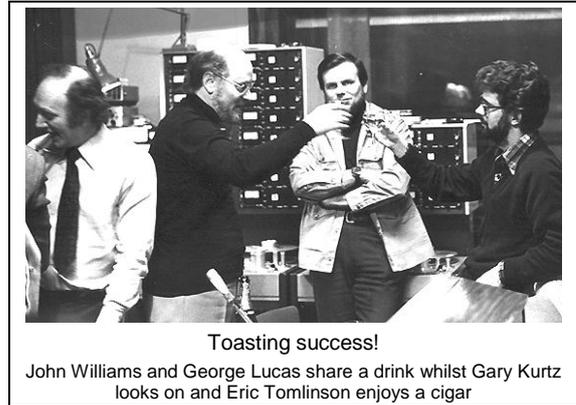
³² "Time-period modulation transmission system." *United States Patent: 4,475,244*. The USPTO. 19 Oct. 2009. <<http://patft.uspto.gov>>.

³³ Malone, Chris. Interview. 10 Jul. 2005.

³⁴ Jenkins, Garry. *Empire Building – The Remarkable Real Life Story of Star Wars*. Great Britain: Simon & Schuster Ltd, 1997.

Recording the Star Wars Saga

The soundtrack was certified “Gold” by the RIAA on its one month anniversary and “Platinum” a month after that. By September the original soundtrack recording of the “*Main Title*” peaked at number 10 in the Billboard charts. In addition to recognition the composer earned with his Academy Award, the soundtrack received a trio of Grammy’s for: “Best Pop Instrumental Recording”; “Best Instrumental Composition”; and “Best Original Score” at the 20th Grammy Awards in 1977.³⁵



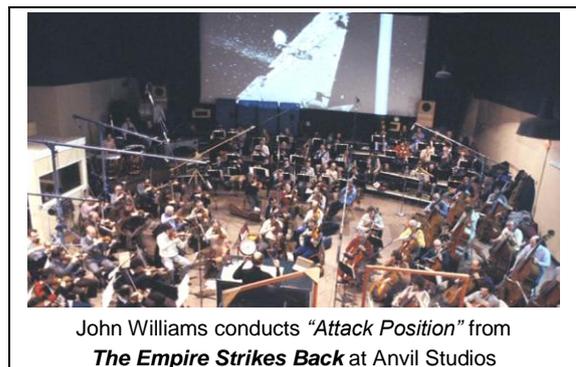
Ben Burt created his special creature voices and sound effects utilising TEAC A-7300, 2300 and 2340 7½ IPS reel-to-reel machines together with a Tascam “Model 5” mixing console. In October 1977, the electronics manufacturer crafted a **Star Wars** related marketing campaign that emphasised the company’s role in production of the film soundtrack. Entrants in the Accuphase/TEAC promotion vied for the chance to win TEAC equipment as well as a Dolby encoded ¼” open reel tape of the LP programme together with a **Star Wars** poster and an R2-D2 robot. The music tape was also offered to dealers for sale at a suggested price of \$12.95.³⁶

Meanwhile, 20th Century Records entered legal battles. In September 1977, Damill Record Sales of Philadelphia became entangled regarding the record company’s exclusive distribution rights. And by February 1978, Pye and Damont had amicably agreed to redesign the sleeves of their recent re-recording to differentiate it from the original soundtrack.³⁷

The Empire Strikes Back

Recording sessions for **The Empire Strikes Back** commenced on Thursday 27 December 1979, some eight weeks after the initial spotting session Williams had with director Irvin Kershner in November. As with the first film, the score was recorded at Anvil in Denham with scoring mixer Eric Tomlinson, recording supervisor Lionel Newman, music editor Ken Wannberg and assistant engineer Alan Snelling reprising their roles. The London Symphony Orchestra returned to perform the score and consisted of over 100 players for the larger cues. A total of 18 sessions were held over nine days, concluding on Friday 18 January 1980.

By the time **Empire** was scored, Anvil’s Neve mixing console had been upgraded to handle 24 outputs that were routed directly to a 24-track 2” MCI recorder encoded with Dolby A. A set of near-field monitor speakers had been added to the meter bridge in the meantime. In accordance with his usual working method, Eric Tomlinson also delivered a live mix – this time in a 6-channel configuration to an 8-track Studer A80 machine encoded with Dolby A. The customary left, centre, right mix was augmented by a trio of ambient microphones. Track 8 contained a 50 Hz tone for film synchronisation and track 7 was left empty to avoid cross-talk between the tone and music tracks. No 35mm magnetic film was recorded during the sessions.



³⁵ “GRAMMY Winners Search.” *GRAMMY.com*. 2005. The Recording Academy. 11 Jun. 2005. <<http://www.grammy.com/awards/search/index.aspx>>.

³⁶ “TEAC Contest - \$14G ‘Super System’.” *Star Wars Promo Also*. Billboard Magazine. Oct. 1977.

³⁷ “Pye & Damont Resolve Hassle on ‘Star Wars’.” Billboard Magazine. Feb. 1978.

Recording the Star Wars Saga

Whilst the miking setup remained essentially the same as the first film, assistant engineer Alan Snelling explained that *“After recording **Alien**, Eric used three Schoeps mikes for LCR ambient pickup.”*³⁸ *“They were just there to enhance,”* related Tomlinson, describing his use of spaced overheads. *“The other mikes were not exactly close but they were closer. Closer so that I could actually handle things and get a balance.”*³⁹

During the sessions John Williams also made a new recording of the full *“Fox Fanfare”* to replace the old 1954 version used to open the previous film. This recording, the first in over 25 years, would also open ***Return of the Jedi*** and was used as a two-channel stereo version for both films.



Hard at work recording ***The Empire Strikes Back***
Eric Tomlinson balances the London Symphony Orchestra whilst
Lionel Newman reviews the score and assistant engineer Alan
Snelling looks on in the control room at Anvil

After completion of main scoring, the best takes were selected and edited and this process was supervised by John Williams and Ken Wannberg at Anvil. Edits of the 8-track and 24-track tapes needed to be identical should either require synchronisation with the film. *“These were performed by Eric and myself,”* recalled Alan Snelling. *“John Williams would time us and give us points for the best edit!”*⁴⁰

Once the master edits were completed, the 6-channel film mixes were transferred to 35mm magnetic film for conformance with the picture at the Goldwyn Studios with music re-recording mixer Steve Maslow. The all-star dubbing crew included Bill Varney on dialog and Gregg Landaker on effects. *“We would rehearse the entire day, taking meticulous notes, including where to insert dialogue,”* explained Maslow. *“If I was playing music at 110 decibels, I could come down gradually without feeling the pull.”*⁴¹. Varney, Maslow and Landaker would later dub ***Raiders of the Lost Ark*** in 1981.

The one million dollar deal to release the ***Empire*** soundtrack had been struck with RSO Records in June 1979 and the album issued some five days before the release of the film in May 1980.⁴² Like ***Star Wars***, the ***Empire*** album was a generous double-LP set (also available on double-cassette) that featured 74 minutes of carefully selected and sequenced music. The album was prepared by John Neal at 20th Century-Fox in Los Angeles by remixing the multi-track tapes, bunching stereo image as well as applying reverb and forward midrange equalisation – a similar technique to that executed for the ***Star Wars*** LPs.

³⁸ Malone, Chris. Interview. 29 May 2005.

³⁹ Malone, Chris. Interview. 10 Jul. 2005.

⁴⁰ Malone, Chris. Interview. 29 May 2005.

⁴¹ “May the Sound Be with You” *The Motion Picture Editors Guild*. 2007. Michael Kunkes. 12 Aug. 2009. <<http://www.mixonline.com>>.

⁴² Jenkins, Garry. *Empire Building – The Remarkable Real Life Story of Star Wars*. Great Britain: Simon & Schuster Ltd, 1997.

Recording the Star Wars Saga

Return of the Jedi

In 1980 the lease expired on the Korda studio complex and the Anvil scoring stage. A developer purchased the site and demolished it by mid-year. Consequently, the Anvil music team were forced to relocate. *“Eric [Tomlinson] and myself formed a new company at the famous Abbey Rd studios,”* related Alan Snelling, *“called Anvil-Abbey Rd ScreenSound Ltd.”*⁴³

The site at number 3 Abbey Road, St John’s Wood, London was originally purchased by EMI in 1929 with a view to develop the world’s first purpose built music recording studio. In 1931 the facility had its inaugural recording with Sir Edward Elgar conducting the London Symphony performing *“Land of Hope and Glory”* in Studio 1.⁴⁴ Whilst technology in the control room has seen significant change over the years the studio itself little modification, retaining dimensions of 90 feet by 50 feet with a 40 foot ceiling.



EMI-Abbey Road Studios
Photographed on 09.11.2006, its 75th anniversary

Due to a lack of interest in classical music recordings, Abbey Road management had been close to making drastic changes to Studio 1. *“When we moved to Abbey Road we were actually the salvation of it,”* explained Eric Tomlinson. *“They were just about to cut Abbey Road 1 into two and put an underground car park in.”*⁴⁵

By the time *Return of the Jedi* was scored, Tomlinson had recorded *Raiders of the Lost Ark* and *Night Crossing*, amongst others, at Abbey Road with prodigious success. *“I think it’s one of the best rooms,”* stated the engineer.

The first session for *Jedi* took place on Monday 17 January 1983 with the ten day schedule concluding on Sunday 6 March. The recording team – that included The London Symphony Orchestra led by Michael Davis, Lionel Newman, Ken Wannberg and Alan Snelling – returned for what was then regarded as the final *Star Wars* film and at the time titled *Revenge of the Jedi*. Prior to the first session, the LSO had recently recorded a Frank Zappa production in Twickenham and, prior to that, James Horner’s meticulously orchestrated *Krull* score at CTS in Wembley.

The mixing console used at Abbey Road 1 was an EMI TG12345 MKII desk that had been re-configured with 24 inputs and 24 outputs. The consoles were produced by EMI Research Laboratories in Middlesex and were, around the time of *Jedi*, the type used at all three Abbey Road studios. *“Ergonomically it was crazy because they’d modified it up to 16-track [initially] and the monitor controls were at each end,”* related Tomlinson. *“And as the desk was 10 foot long by 8 foot wide, if you wanted to turn down something you had to get up, walk over and turn it down and then you’d find that something at the other end of the desk wanted turning up to balance it out.”*⁴⁶ Monitoring at Abbey Road Studio 1 was through B&W speakers.

⁴³ Malone, Chris. Interview. 29 May 2005.

⁴⁴ “The 30’s.” *Abbey Road Studios*. 2003. EMI Group PLC. 11 Jun. 2005.
<<http://www.abbeyroad.co.uk/history/30s/index.php>>.

⁴⁵ Malone, Chris. Interview. 10 Jul. 2005.

⁴⁶ Malone, Chris. Interview. 10 Jul. 2005.

Recording the Star Wars Saga

Despite a change in venue from *Empire*, the miking setup employed was similar to that used for the previous film. Once again, an MCI 24-track recorder captured the discrete console outputs and live 6-channel mixes were made to an 8-track Studer. The configuration of the 6-channel mixes was: left; centre; right; left-centre; centre; and right-centre. The six channels would be folded down to three front channels during dubbing. Generally timpani, woodwinds and violas were directed to the centre with a small amount of bleed from the brasses also present. As with *Empire*, no 35mm magnetic film recordings were made during scoring.⁴⁷



Reviewing the score on the TG12345 console
Recording *Return of the Jedi* at EMI-Abbey Road
Ken Wannberg, Eric Tomlinson and John Williams

The deep, wordless male chorus that accompanied The Galactic Emperor was recorded live with the orchestra. *"We did very little overdubbing with John Williams,"* recalled Eric Tomlinson.⁴⁸ Despite this, *Jedi* was perhaps the first time that a few minor overdubs were performed, most notably for *"Faking the Code [Shuttle Tydirium Approaches Endor]"*, *"Luke and Vader Duel [The Duel Begins]"* and an oscillating synthesised wail for *"The Emperor."*

The cue that accompanied Lando Calrissian's flight through the inner workings of the Death Star (titled *"Superstructure Chase"* on the Special Edition CDs) was not recorded at Abbey Road. *"We had to go to Olympic for a day and record there,"* explained Eric Tomlinson. *"And we filled the studio so full – we even had to put the piano on end so that we could get the last cello players in!"*⁴⁹

Olympic Sound Studios were located at 117 Church Rd in Barnes, London. Studio 1 was 62 feet by 42 feet with a 28 foot ceiling. Equipment at Olympic included a custom made 24-input wrap-around console together with custom speakers and amplifiers designed by studio manager and chief engineer, Keith Grant. The microphone cabinet was stocked AKG, Neumann, Pearl and Telefunken types.

The orchestra in the *"Superstructure Chase"* sounds reduced in trumpets, horns and woodwinds and several performance errors can be detected that are not readily audible in the film. *"I went down to talk to John Williams while he was conducting,"* recalled Tomlinson. *"And he just leaned over and said 'it's like conducting a silent film!' He couldn't hear a damn thing in there."*⁵⁰

"I took it back to Abbey Road and I spent days trying to make it sound like Abbey Road, like the rest of it, and I just couldn't," explained Eric Tomlinson. *"We gave up in the end. And although it sounded OK in the studio at Olympic it didn't match up with the preceding or following cue. They almost dropped it but it was too important to drop."*⁵¹

It is surmised that the concert suites titled *"The Forest Battle"*, *"Parade of the Ewoks"*, *"Luke and Leia"* and *"Jabba the Hutt"* were recorded either on the 17 January or 6 March – at the start or end of the main scoring sessions at Abbey Road.

⁴⁷ Malone, Chris. Interview. 29 May 2005.

⁴⁸ Malone, Chris. Interview. 10 Jul. 2005.

⁴⁹ Malone, Chris. Interview. 10 Jul. 2005.

⁵⁰ Malone, Chris. Interview. 10 Jul. 2005.

⁵¹ Malone, Chris. Interview. 10 Jul. 2005.

Recording the Star Wars Saga

The “*Lapti Nek*” and other Max Rebo band cues were recorded at 20th Century-Fox, in Los Angeles, by engineer Armin Steiner, who had succeeded John Neal and was appointed the position on Lionel Newman’s request. “*Lapti Nek*” appeared on the soundtrack LP in a different mix to that heard in the film. Vocals were performed in Huttese by Michelle Gruska. In addition, the piece was remixed by Steve Thompson and issued by PolyGram as a 12” 45 RPM single that contained a “Club Mix” and an instrumental “Dub Mix.” Lyrics were included on the back of the sleeve. [Refer to [Appendix C.](#)]



Last minute adjustments to the score in the control room at EMI-Abbey Road

By 1983 orchestral soundtracks had fallen out of favour through increasing use of synthesisers and popular music as actual underscore. This was perhaps just one reason that *Return of the Jedi* was not issued as a double-LP. It has subsequently become the only *Star Wars* saga soundtrack to miss charting in the Billboard Top 10. The album contained several concert arrangements and did not represent much of the actual underscore however it did retain original mixes made by Eric Tomlinson and boasted a clear and alive sound.

The LP did present several curios. The “*Main Title*” has the timpani reduced in level compared with the film and subsequent album releases. It did, however, replicate the film’s segue to the “*Story Continues*” music and include throbbing synthesiser overdubs commencing at approximately 1:30 that are absent from subsequent issues. The cue titled “*Rebel Briefing*” did not represent the expected music and the “*Ewok Celebration*” finale was not the same version heard in the film. The film mix of the “*End Title*” featured more prominent percussion, woodwinds and timpani during the “*Parade of the Ewoks*” segment. The cymbals and some other percussion instruments were placed centrally versus hard left in the film. This was most likely created during the dubbing process at Lucasfilm’s Sprocket Systems, in San Rafael, by music re-recording mixer Randy Thom. It is possible that Lucasfilm’s then emerging SoundDroid Workstation was used in production of the film’s final soundtrack.

Following *Jedi*, Eric Tomlinson and Alan Snelling continued to record film scores at Abbey Road Studio 1 until the Anvil-Abbey Road alliance ended in 1984. Both engineers then went freelance and recorded at other studios in London, as well as occasionally returning to Abbey Road and travelling elsewhere in Europe, continuing to attract new clients from America. By the mid 1990s, unfavourable exchange rates between the US dollar and English pound brought this to an end.

Today, Eric Tomlinson continues to work on small projects and is revisiting his roots by recording jazz, a favourite genre of his. Alan Snelling and his wife run a successful audio post-production and selective music recording business. Some of Snelling’s more recent credits include re-recording mixing for *55 Degrees North*, *Roman Road* and *Wall of Silence*.

Both Tomlinson and Snelling have fond memories of their contribution to the *Star Wars* saga.



Eric Tomlinson balances the LSO on the Neve mixing console at Anvil Studios during the recording of *Star Wars*

Recording the Star Wars Saga

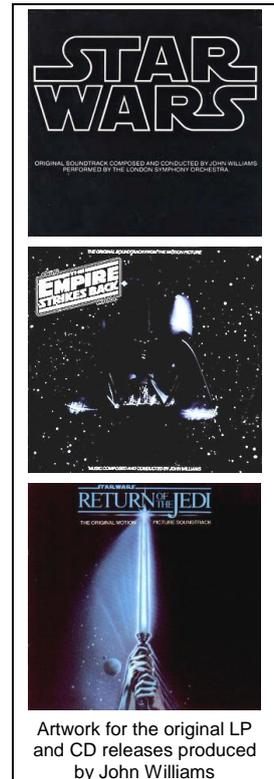
The Original Trilogy on CD

The PolyGram CDs

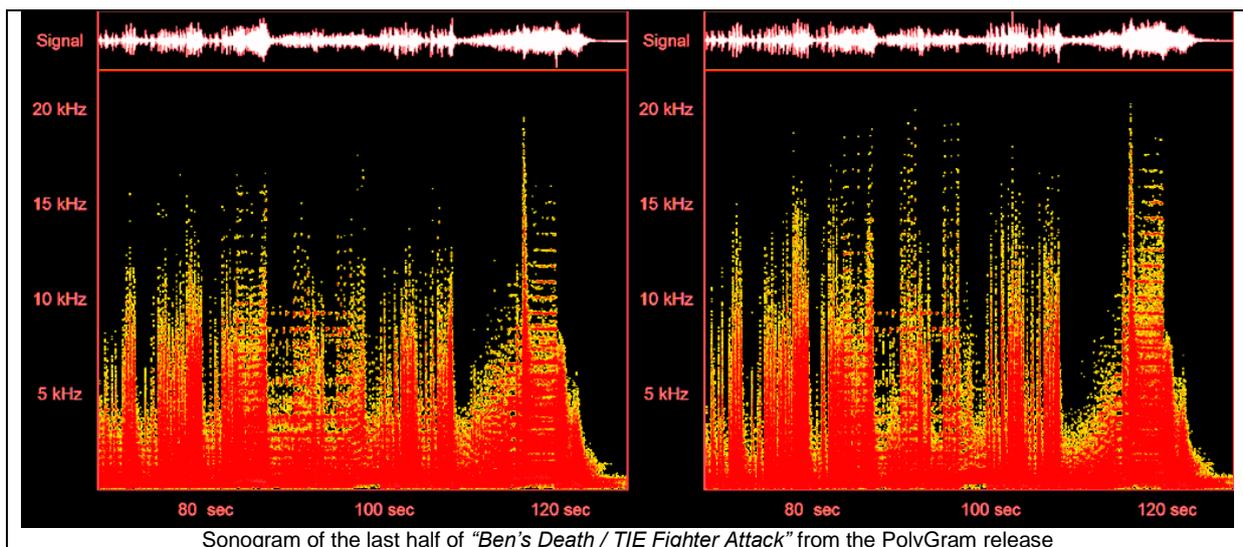
Star Wars was first released on CD in 1986 in its original double-album configuration spread over two discs. Release dates varied in Germany, the US and Japan. It seems probable that the same mastering was used for all **Star Wars** releases as the Japanese RSO P33W 20014/15 passes a “null test” with the German PolyGram 800 096-2. As the film and album edits are identical, it is also possible to analyse pitch. The “Main Title” is down pitch by about 4½ cents compared with the original theatrical film whereas, conversely, the “End Title” is up pitch by about 20 cents. It is assumed that the film is correct. Sporadically, “wow” is present.

Of the original **Star Wars** soundtrack album, audiophile re-mastering engineer Steve Hoffman scribed, *“I remember rushing out to Tower after opening week in 1977 to buy the soundtrack album on Fox records. It sounded lean and nasty. When the double CD version came out (was it 1985?) I didn't think it was possible but it sounded even leaner and nastier. Urch, it really bit.”*⁵²

Hoffman also revealed that colleague Kevin Gray had access to the 16-track scoring tapes in 1982. *“[Kevin] got about 3 hours to mess with them and did a personal rough mix, long turned to glue, sorry to say. When I heard it, I flipped. Wide dynamic range, amazing tonality, punchy and awesome, just like I heard it on the big screen at the Chinese in 70mm mag back in 1977. Why can't the official soundtrack sound that way? WHY???”*⁵³



Whilst the middle highs are somewhat coarse, the tone is not overtly aggressive making it a pleasant listening experience over extended periods. Lowest registers have been attenuated and this is evident in the low frequency reach of basses and timpani. At the opposite end of the spectrum, frequency response extends above 15 KHz. A small quantity of 60 Hz hum is present in all tracks and would have been introduced during preparation of the album master in the USA as the UK operates a 50 Hz electrical system. This edition is perhaps the most dynamic yet tonally soft of any digital release.



⁵² “Geez, the STAR WARS soundtrack! Has this EVER sounded good on LP or CD?.” Steve Hoffman Music Forums. 21 May. 2008. Steve Hoffman. 13 Aug. 2009.

< <http://www.stevhoffman.tv/forums/showpost.php?p=3488258&postcount=1> >.

⁵³ “Geez, the STAR WARS soundtrack! Has this EVER sounded good on LP or CD?.” Steve Hoffman Music Forums. 21 May. 2008. Steve Hoffman. 13 Aug. 2009.

< <http://www.stevhoffman.tv/forums/showpost.php?p=3488258&postcount=1> >.

Recording the Star Wars Saga

There is a 2 sample (45 μ s) azimuth error in “*TIE Fighter Attack*” however this can be corrected via delay to the left channel. Azimuth elsewhere was almost faultless and provides a solid centre of stage. One dropout was detected at approximately 18 seconds into “*Ben’s Death*.” A partial reduction in fidelity of the left channel was also noted approximately 10 seconds later.

It seems that *The Empire Strikes Back* was the first of the Original Trilogy to see CD publication through PolyGram and RSO in 1985 – a truncated single CD version that matched the single LP issued in several territories including Australia. The CD replicates the Side A/B reversal of the LP with the “*Finale*” commencing at track 5 and “*Main Title*” at track 6. The disc exhibits screechy, brittle and rough middle highs – more so than its vinyl counterpart. These can be tamed quite successfully via use of subtractive equalisation. At times pitch differs from the film with the “*Main Title*” down by about 13 cents, for example, whereas this was not necessarily the case with the vinyl.

Strangely, the artwork of the first *Return of the Jedi* CD erroneously claimed it to be a “Digital Recording” and used the SPARS (Society of Professional Audio Recording Services) code of “DDD” to indicate this. Irrespective, the *Jedi* disc features a pleasing sound quality with a rich uncoloured tone, expansive dynamics and appealing resonance. Time alignment is exact and no frequency related or linearity distortions are discernable creating specificity and stability of localisation. Certainly, this is most accurate of the Japanese RSO P33W 20017 release.

The PolyGram discs remained available to the mid 1990s and can still be found at second hand dealers.

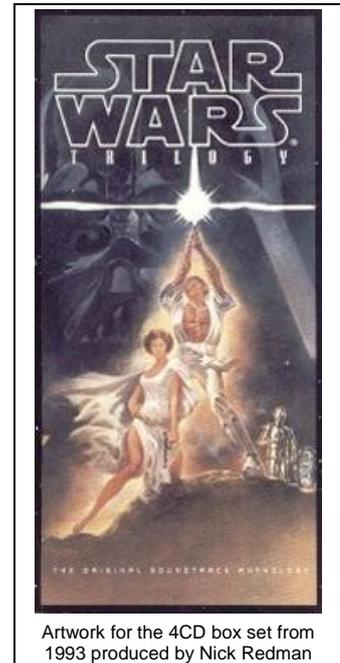
The Arista Original Soundtrack Anthology Box

The first expansion of the scores came in 1993 with the 4CD *Star Wars Trilogy* box set from Arista. The set included a 74 minute, chiefly chronological, disc for each score plus a bonus fourth disc containing the best of the remaining music from all three films. The set was assembled by Ford A. Thaxton under the direction of producer Nick Redman.

Star Wars

For the first time *Star Wars* utilised the actual film mixes, prepared by Eric Tomlinson, sourced from two-track tapes that contained each take recorded for every cue. From these, the take that predominately matched the film was selected for inclusion in the box set. The tapes presented details obscured from the original album – a wider stereo spread was immediately evident as was a greater sense of presence and an extended frequency response. It is worth noting that a 19 KHz tone is present in all cues and that the original PolyGram edition is generally up pitch by 1/6th or 1/7th of a semitone compared with this release.

The *Star Wars* score was assembled to match the sequence of the double-LP without performing the intra-cue trims made for the original album. In more recent years the *Star Wars* disc was criticised for utilising “all the wrong takes” when in reality this is often not the case. For example: all of “*Mouse Robot*” is identical to the original release; the first 1:05 of “*Rescue of the Princess*” is identical; and only the last 17 seconds of “*The Robot Auction*” differ from the film.

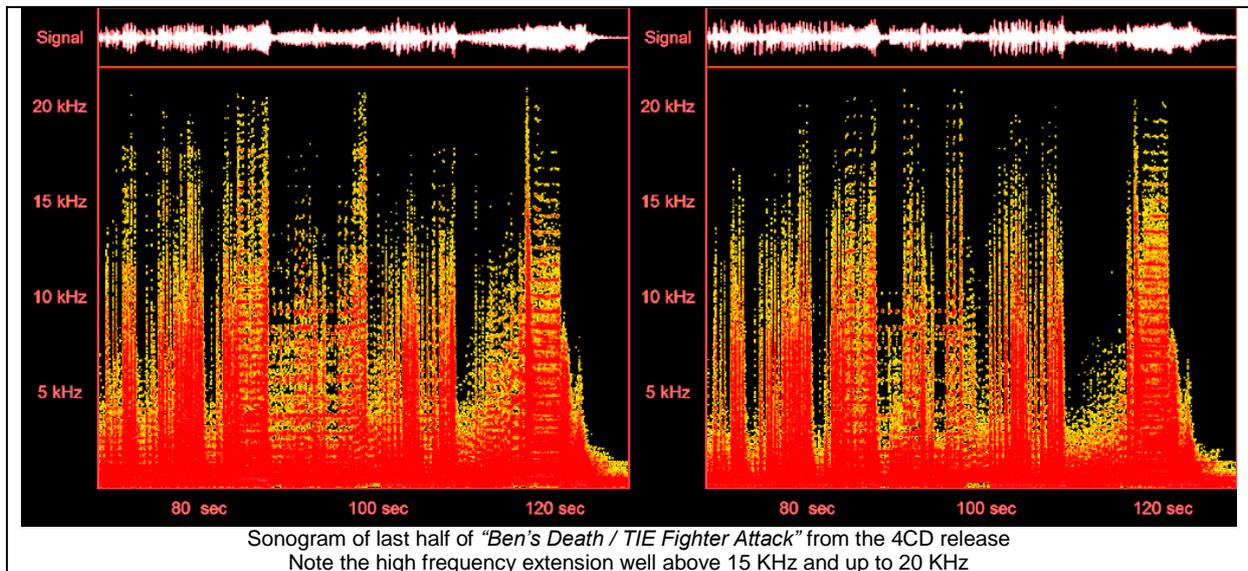


Recording the Star Wars Saga

Any differences most certainly did not come about through carelessness. *“Given the fact that we had no paperwork to work from other than the slates to go by, plus only about a week to assemble each one of the one four CD’s,”* clarified Ford A. Thaxton, who sequenced and assembled the discs, *“I’d say it turned out far better than anyone involved could have hoped for.”*⁵⁴

In some cues, the left channel is considered to be three dB lower than intended and this is most evident when assessing the woodwinds in the quiet section of the *“The Robot Auction”* and by making direct comparisons against the PolyGram and Special Edition releases.

Dynamic range is, rather surprisingly, further restricted compared with the PolyGram CD. There is audible over-modulation, and consequently harmonic distortion, during loud passages. Although time alignment is generally precise, the centre of soundstage is a little ambiguous at times with possible upper midrange non-linearity introduced through equalisation. It is surmised that these issues were created during transfer to the digital domain and are not concerns with the source recording.



The Empire Strikes Back

The Empire Strikes Back was largely mastered from four-track ¼” tape copies comprising the edited film mix as three channels of music with one track being a pilot tone for film synchronisation. These tapes were purportedly in poor condition – probably suffering from lubricant failure therefore making baking an inappropriate treatment – and were not located until near completion of the project.⁵⁵ *“At least one tape was beginning to fall apart as I transferred it,”* recollected mastering engineer Bill Wolford. *“I had to use alcohol on the capstan wheel to clean the disintegrating residue off as it played, being careful not to affect the pitch. If I hadn’t done this the tape would cause a squeal as it passed the heads rendering the dub useless.”* Wolford recalled this being a stressful time as there were limited playbacks possible before the tape was rendered unusable.⁵⁶

⁵⁴ “Expanded Indiana Jones Scores.” *Film Score Monthly Message Board*. 2 Nov. 2003. Ford A. Thaxton. 13 Aug. 2005. <<http://www.filmscoremonthly.com/board/posts.asp?threadID=16267&forumID=1>>.

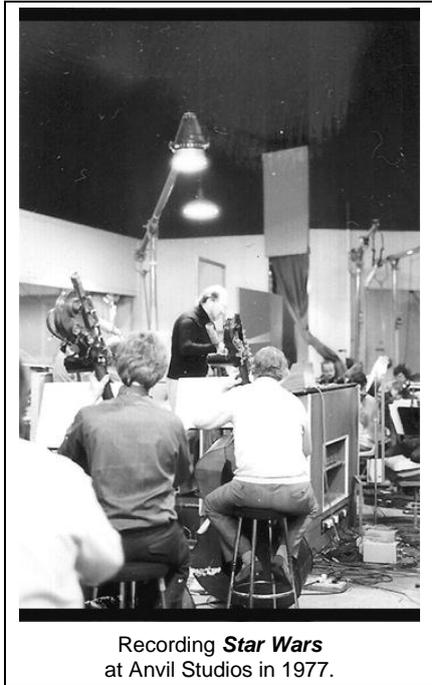
⁵⁵ “4 CD set details.” *rec.arts.sf.starwars*. 25 Feb. 1994. Lukas Kendall. 11 Jun. 2005. <http://groups.google.com.au/group/rec.arts.sf.starwars/browse_thread/thread/ccb68dbf149cfe8c/ee085da7cb141179>.

⁵⁶ Malone, Chris. Interview. 27 Sep. 2007.

Recording the Star Wars Saga

To make matters worse, the *Empire* tapes were incomplete and PolyGram was unwilling to locate the original LP album tapes. This necessitated the use of 35mm magnetic film recordings, edited for assimilation with the picture, together with several cues lifted directly from the original PolyGram CD. Cues sourced from magnetic film included “*The Rebels Escape Again*” and “*City in the Clouds (Part 1)*” whereas “*Yoda’s Theme*” came from the original CD.⁵⁷

The author supposes that additional cues including “*The Imperial March*” and “*Battle in the Snow*” were also sourced from a copy of the album tapes. These titles do not possess the dynamic range of other previously unreleased selections such as “*Luke’s First Crash*” and “*Crash Landing*” and retain the original album balance. The notable exception is the final horn statement during the conclusion of “*The Asteroid Field*,” which emanates from the left channel as per its corresponding film mix rather than the centre. Bill Wolford confirmed that one tape utilised was from Germany and this is suspected to be a copy of the single disc album.⁵⁸ Some cues have a small quantity of 50 Hz hum present and the 19 KHz tone detected in the *Star Wars* tracks.



Recording *Star Wars*
at Anvil Studios in 1977.

Perhaps surprisingly, the *Empire* disc combines the different source materials rather well with no jarring hiss-level or balance changes from track to track. To quibbles, the left and right channels are swapped during “*Leia’s Instructions*” and “*The Departure of Boba Fett*.” A few cues contain dropouts. The left channel during “*The Training of a Jedi Knight*” is diminished by approximately 6 dB for 8 seconds around the 35 second mark of the piece. The woodwind opening of “*The Asteroid Field*” has a similar issue where the right channel is approximately 3 dB down for a few bars.

The cues dubbed into Tom Voegeli’s impressive NPR radio drama seem to represent the film mix and maintain solid staging with an agreeable tonality. The author ponders the fate of the source tapes utilised by sound designer Voegeli for his 3M digital production made at St Paul, Minnesota.

Return of the Jedi

The *Return of the Jedi* disc included music that may have been conscripted for a double-LP set had it ever eventuated. The production team made extensive use of two-track tapes containing the edited film mixes despite three-track tapes also being available at the time. A number of cues were also lifted directly from the original PolyGram CD because they could not be located on other available sources. These included: “*Han Solo Returns*”; “*The Return of the Jedi*”; “*Parade of the Ewoks*”; “*Luke and Leia*”; “*The Forest Battle*”; and the “*Ewok Celebration / End Credits*.”⁵⁹ Each of these underwent re-equalisation with minor gain to lowermost and uppermost registers. Consequently, there is evidence of non-linearity in the extreme highs that is most prevalent during bell *glissandos* and the use of triangle.

Each cue is representative of Eric Tomlinson’s mixes as the original *Jedi* score was not specifically remixed or altered for issuance on vinyl. The sound is dynamic, expressive and possesses satisfying localisation with a lifelike ambience. Azimuth alignment for most cues, especially those obtained from the PolyGram CD, is pleasantly precise. A notable exception is the film version of “*Funeral Pyre for a Jedi*” which exhibits time-alignment issues resulting in phasing.

⁵⁷ “4 CD set details.” *rec.arts.sf.starwars*. 25 Feb. 1994. Lukas Kendall. 11 Jun. 2005.
<http://groups.google.com.au/group/rec.arts.sf.starwars/browse_thread/thread/thread/c6b68dbf149cfe8c/ee085da7cb14f179>.

⁵⁸ Malone, Chris. Interview. 27 Sep. 2007.

⁵⁹ “4 CD set details.” *rec.arts.sf.starwars*. 25 Feb. 1994. Lukas Kendall. 11 Jun. 2005.
<http://groups.google.com.au/group/rec.arts.sf.starwars/browse_thread/thread/thread/c6b68dbf149cfe8c/ee085da7cb14f179>.

Recording the Star Wars Saga

Anthology Box Set Summary

Assembly of the box set took place in late 1993 with the project almost cancelled due to the **Empire** tapes remaining wanting for most of the assembly period. Music transfers, editing and pre-mastering activities were performed by Bill Wolford at The Music Source under the supervision of Ford A. Thaxton. *"Ford had gotten these 'masters' from seeming all ends of the Earth – some from Europe some from the US,"* recalled Wolford. *"The formats were sometimes DAT sometimes reel-to-reel. As I received these I would transfer them to digital."* Wolford edited cues together in the digital domain utilising a Studiophile hard disk based workstation, a machine with rudimentary cross-fading capabilities.⁶⁰

No dynamic range compression or peak limiting was used. No significant EQ was applied other than the occasional nudge at 10 or 11 KHz to add sheen. In fact, the only deliberate dynamics processing performed was passing the tapes through Dolby A decoders. Wolford approached the project with the intention of creating the best sound possible.⁶¹ Unfortunately, the full dynamic range of some cues has been compromised with evidence of over-modulation in the analog domain during transfer to digital. This is most obvious in the *"Carbon Freeze"* suite, *"Crash Landing"* and *"Attack Position"* from **The Empire Strikes Back**. Although Dan Hersch from DigiPrep is officially credited as mastering engineer he only worked on two or three cues due to a lack of time.⁶²

After assembly was completed, Nick Redman made one or two changes to the sequence before presenting the final product to Lucasfilm for approval. Remarkably, one more hurdle needed to be crossed when the project was almost vetoed at the eleventh hour because it had *"too much hiss."*⁶³

The **Star Wars Trilogy Original Soundtrack Anthology** box set was released in December 1993. It was a lavish production featuring a stunning 64 page colour booklet that included many previously unseen photos of Williams and the musicians in addition to striking original concept art by Ralph McQuarrie. Easy to read and scene-specific liner notes were provided by Lukas Kendall.

Soon after the box hit shelves, rumour circulated of a fifth disc intended to augment the set and offer more previously unissued music. This disc was to contain the *"Mynock Cave"* (space slug) cue that was conspicuously missing from the **Empire** disc, even though it was available on the original LPs and PolyGram CD. Originally slated for a December 1995 release, the fifth disc was eventually cancelled despite a CD master having been prepared by Ford A. Thaxton at around the time the box set was completed.⁶⁴

Speculation of upcoming Special Edition theatrical re-releases and rumour of a new series of **Star Wars** films were possible reasons why the fifth disc project was quelled until a more appropriate marketing opportunity arose. In fact, it seems that the box set was itself a fortunate eventuality. *"At the time I pitched it to Fox and Lucasfilm (Feb 93) there was very little interest in the Star Wars universe,"* explained producer Nick Redman. *"It was agreed to test the market with a box set, which would act as a barometer for the 'special editions' down the line."*⁶⁵

⁶⁰ Malone, Chris. Interview. 27 Sep. 2007.

⁶¹ Malone, Chris. Interview. 27 Sep. 2007.

⁶² Malone, Chris. Interview. 27 Sep. 2007.

⁶³ "Star Wars 4CD Box Set Review." *rec.arts.sf.starwars*. 29 Nov. 1993. Lukas Kendall. 11 Jun. 2005. <http://groups.google.com.au/group/rec.arts.sf.starwars/browse_thread/thread/66e2e4da94981c0d/e74c166eeb87913a>.

⁶⁴ "Box Set 5th Disc?" *rec.arts.sf.starwars*. 25 Jun. 1994. Lukas Kendall. 11 Jun. 2005.

<http://groups.google.com.au/group/rec.arts.sf.starwars/browse_thread/thread/4fbdb2cc63335855/c99c308b0d4dc9ac>.

⁶⁵ "Expanded Indiana Jones Scores." *Film Score Monthly Message Board*. 7 Nov. 2003. Nick Redman. 13 Aug. 2005.

<<http://www.filmscoremonthly.com/board/posts.asp?threadID=16267&forumID=1>>.

Recording the Star Wars Saga

The RCA Victor Special Edition CDs

The most recent CD mastering of the Original Trilogy was produced by Nick Redman in 1997 for the RCA Victor 2CD Special Edition albums. These vary from the original album presentations in two ways. Firstly, the 2CD sets definitively present (virtually) complete and chronologically sequenced versions of the three scores. Secondly, sound quality differs from previous releases. The Special Edition albums were edited by Michael Matessino and mastered by Dan Hersch of DigiPrep.

Star Wars

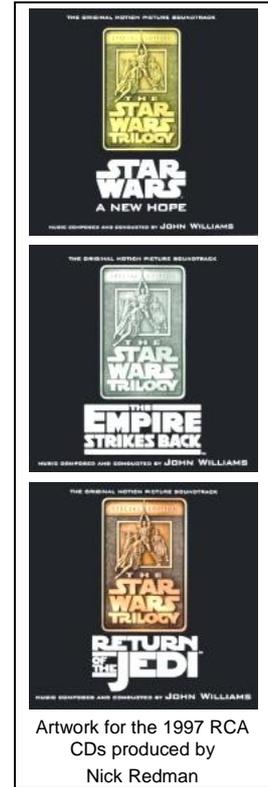
During preparation of the Special Edition films, sound designer Ben Burtt and his team located all audio recordings for the trilogy in order to source the best versions of dialog, effects and music tracks for a new 5.1 split-surround remix. At this time the original, unedited three-track 35mm magnetic film recordings of *Star Wars* were located as well as the 16-track master session tapes. Vice-President of postproduction at 20th Century-Fox TV, Ed Nassour, discovered the magnetic film recordings in 1986 by accident. *“They were in the back of an old editing room where a leaky roof had soaked the cases. Fortunately, the contents were still in good shape. I informed [music editor] Len [Engel], and the material was quickly placed in proper storage.”*⁶⁶

The 35mm magnetic film recordings offered a breathtakingly close and incredibly detailed version of score. There were no discernable issues with wow that can affect older magnetic film recordings through shrinkage. Balance between the left, centre and right channels appears to have been properly achieved during transfer to digital. Michael Matessino re-edited these recordings in the digital domain following Ken Wannberg's original editing paperwork.

The 16-track tapes were of limited value as the sections that corresponded to the preferential takes were edited out and presumably stored on another set of reels that are now considered misplaced. The tapes did allow inclusion of an alternate *“Binary Sunset”* cue together with certain pieces that were missing or damaged on the 35mm recordings. It is surmised that the mixes made from the 16-track material consisted of a transfer of the left-centre-right live film mixes contained therein.

Takes 18 through 20 of the *“Main Title Archive”* together with several other cues have been imprinted with the 19 KHz signature tone heard during every *Star Wars* cue on the 4CD set. Other cues imprinted with the tone include: *“The Moisture Farm”*, *“The Hologram”*, *“Binary Sunset”*, *“Tales of a Jedi Knight”*, *“Wookiee Prisoner”*, *“Shootout in the Cell Bay”*, *“Dianoga”* and *“Princess Leia's Theme.”*

The aforementioned cues play almost identically to their counterparts on the 4CD box set with exception of occasional edits to other takes, the application of EQ and level differences. The 2CD versions run almost imperceptibly faster – as if sampled at 47,999 Hz rather than 48,000 Hz – but are otherwise perfectly synchronised inferring that new digital transfers were not undertaken moreover that DATs created by Bill Wolford in 1993 could have been used. This seems to be confirmed when analysing a minor electrical blemish present in the waveform corresponding to the timpani hit at the start of *“Shootout in the Cell Bay.”* Curiously, the absolute polarity of these cues differs between the 4CD box, original PolyGram album and 2CD set – the latter two are believed to be correct.

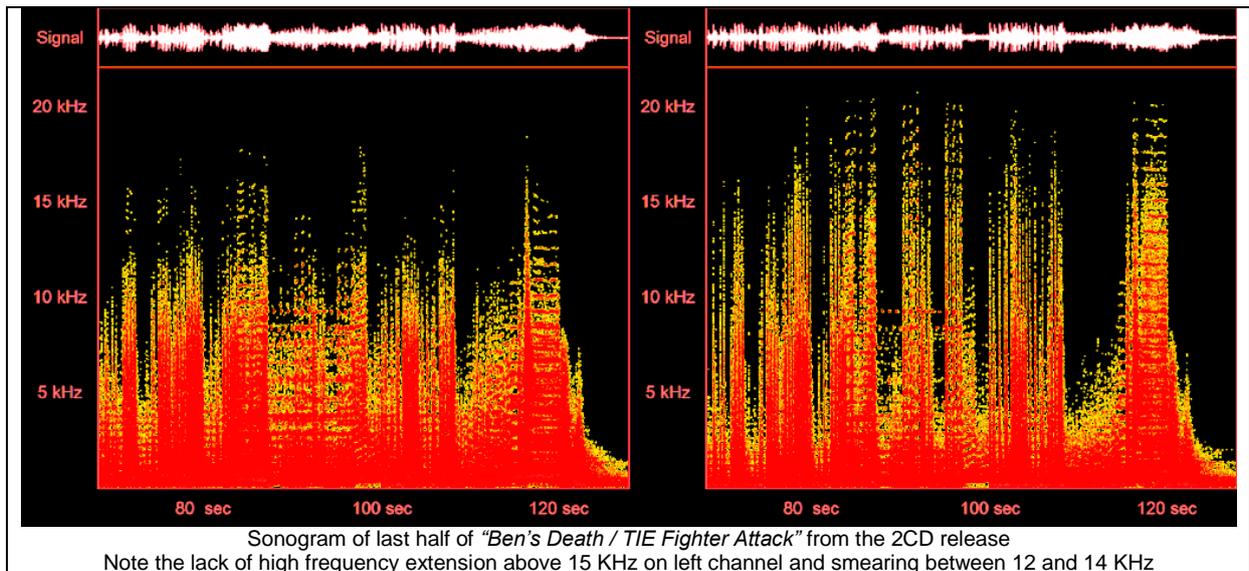


⁶⁶ “El Cid extra cue on LP??.” *The Rózsa Forum*. 7 Jan. 2003. Ed Nassour. 28 Sep. 2007. <<http://p222.ezboard.com/fmiklosrozsatherzsaforum.showMessageRange?topicID=766.topic&start=61&stop=80>>.

Recording the Star Wars Saga

On the negative side, there is evidence of dynamics processing having been applied during mastering that leads to a somewhat fatiguing listening experience. Some cues reveal over-modulation during loud trumpet and timpani passages, more so than on previous releases. The brasses impart a rather harsh and aggressive texture that is most noticeable during “*TIE Fighter Attack*.” Distortion is readily detectable and most prevalent during the brass statement of the Imperial motif and subsequent timpani roll at conclusion of the aforementioned cue.

A quantity of digital noise reduction has been employed to address concerns with hiss and this has consequently affected high frequency quality and reach. It is possible that decomposition of the magnetic film stock is a contributing factor. However, considering that both existing tape and magnetic film sources were used to prepare this edition, it is likely that the application of equalisation has a significant role to play. For example, in “*Ben’s Death / TIE Fighter Attack*” there is a lack of high frequency extension above 15 KHz, on the left channel, and a smearing between 12 and 14 KHz.



The Empire Strikes Back

For *The Empire Strikes Back*, five of the pre-edited 24-track backup rolls were remixed by Brian Risner at the Fox Zanuck Theatre in 1996. Ostensibly, these tapes contained the cues that appeared on the original double LP album.

The Brian Risner remixes are dry, bunched and often place instruments on opposite sides of the stereo image compared with their original film and album versions. “*Hyperspace*,” the “*Main Title*” and “*City in the Clouds*” are examples of this. In many cues, it seems that every microphone was fully opened resulting in a lack of depth and layering. The balance presented by the remixes also varies from cue to cue with a substantial lack of consistency and little attempt made to cover splices that, whilst perfectly acceptable in 1980, could have been improved with digital editing technology. Some cues examined play at different pitches compared with the 4CD set. “*City in the Clouds*” is down by 1/6th of a semitone; the “*Main Title*” is down by 1/31st and almost 10 cents from the film itself; “*Hyperspace*” is up by 1/50th; “*The Imperial March*” is down by 1/23rd; and so on. For no apparent reason, the final note of the “*Fox Fanfare*” has been shortened by one second compared with the box set.



Recording the Star Wars Saga

For all other cues, the digital transfers made by Bill Wolford in 1993 appear to have been utilised. These include: “*Snow Speeders Take Flight*”; “*Arrival on Dagobah*”; “*Rescue from Cloud City*”; “*Attacking a Star Destroyer*”; and “*The Wampa’s Lair*.” The latter contains an alternate section, between 0:54 and 1:23, with a more prominent synthesiser than the film and 4CD set. All of these cues synchronise perfectly with their 4CD box set counterparts and contain the 19 KHz signature however occasionally differ in absolute polarity.



John Williams and the London Symphony Orchestra
at Anvil Studios

Most of the “*Carbon Freeze*” suite would seem to originate from this source too however the individual cues have been recombined to correctly place segues and address swapped left-right channels in “*The Departure of Boba Fett*.” There is an alternate, atonal, ending to “*Carbon Freeze*” that commences at 2:35 – with a slightly different horn statement and no trombones – and concludes at 3:21. “*The Departure of Boba Fett*” appears to be from a different transfer as the 1993 edition seems to exhibit a pitch change over its length.

The resultant album combines the two-track and 24-track sources and unfortunately suffers significantly from doing so. When experienced as a complete album, ***Empire*** has many tonal and imaging shifts that are the result of some cues retaining the enveloping and composer approved Eric Tomlinson film mix whereas others adopt the adhoc Brian Risner remix. To the author, the 4CD box set therefore offers the definitive mix of the score despite being further generations away from the original unmixed session tapes and likely to include a handful of cues adjusted by John Neal in 1980. [Refer to **Appendix A** for a list of remixed cues for the Special Edition set.]

To positive comments, the sequencing and liner notes are both of high quality. Alternate cues are ingeniously incorporated into the narrative and include an unused, powerhouse rendition of “*The Imperial March*” in “*Aboard the Executor*.” Some electrical blemishes, dropouts, buzzes and problems with swapped left and right channels from the 4CD set were addressed. The overall dynamic range is generally well preserved although the steely equalisation adopted is not overly flattering to the music.

The film mix of “*The Imperial March*” has not been released even though 45 seconds of it was tracked into the film. This version has distinct cymbal crashes, bass drum hits, more prominent french horns and cellos that seem more *marcato* than *staccato*. The opening bars appear to come from a different take. This version is similar in orchestration to re-recordings performed over the years.

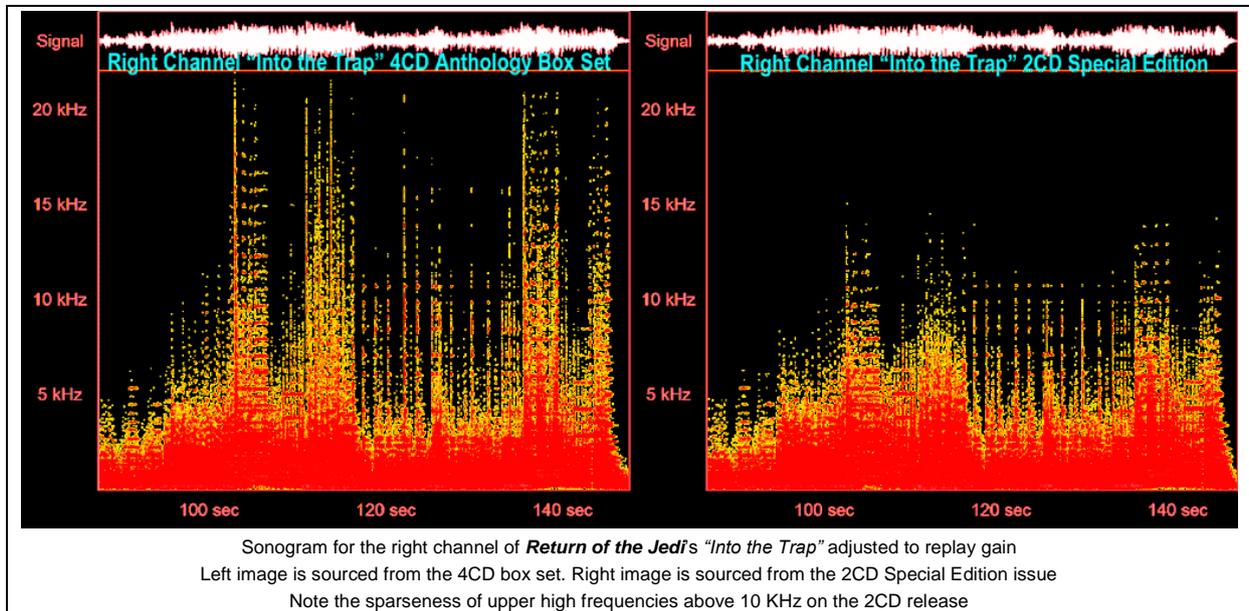
[Return of the Jedi](#)

Almost immediately following release of the 2CD Special Edition to ***Return of the Jedi***, the recording was criticised for possessing a soft and muffled sound. A three-track reduction of the original pre-edited Abbey Road tapes was used to prepare the set, which was beautifully assembled by Michael Matessino. Unfortunately, this is one of the few positive comments that can be made about the presentation.

Disappointingly, the upper highs have been significantly attenuated. Signal above 10 KHz is virtually non-existent and most certainly rarely extends beyond 14 KHz. It would seem that no additional EQ, however radical, can cajole these frequencies satisfactorily. There is also an inconsistent application of EQ from disc one to disc two with the former generally brighter compared with the latter.

Recording the Star Wars Saga

The reason for the conspicuous absence of upper highs – and the hiss that should be present with analog recording – could be shared between poor alignment of the machine used to reproduce the source tapes and incorrect calibration of the requisite Dolby A decoder. More likely, the extensive use of digital noise reduction during mastering is the culprit. The noise reduction has vacuumed up the ambience of the original recording leaving a false, barren wasteland in its place. As a whole the music is congested and closed-in, lacking the aliveness of earlier releases.



Close comparisons with the 4CD box set, original PolyGram CD and LP editions reveal that some distortion is present on the 2CD set yet absent from all prior releases. This is most noticeable on timpani hits and in *forte* passages. The distortion may have been created or at least made more noticeable by the excessive dynamic range limiting that was applied during mastering.

Dynamic range compression and limiting has no logical place on orchestral recordings mastered for CD, SACD or DVD. The limiting applied here grotesquely disfigures the original dynamics and consequently flouts the intentions of the composer and his engineer. Much of the score sounds like it was played *fortississimo*, with the soundstage underhandedly migrated forward, leading to a fatiguing listening experience. Curiously, despite the violent limiting, the discs do not properly take advantage of the full resolution of CD with peaks often lopped between -2.5 and -1.5 dBFS on the first disc.

The original album master was utilised for several suites including: "The Return of the Jedi (Sail Barge Assault)", "Luke and Leia", "Parade of the Ewoks", "The Forest Battle", and the "End Title" as these pieces were not located on the scoring tapes utilised.

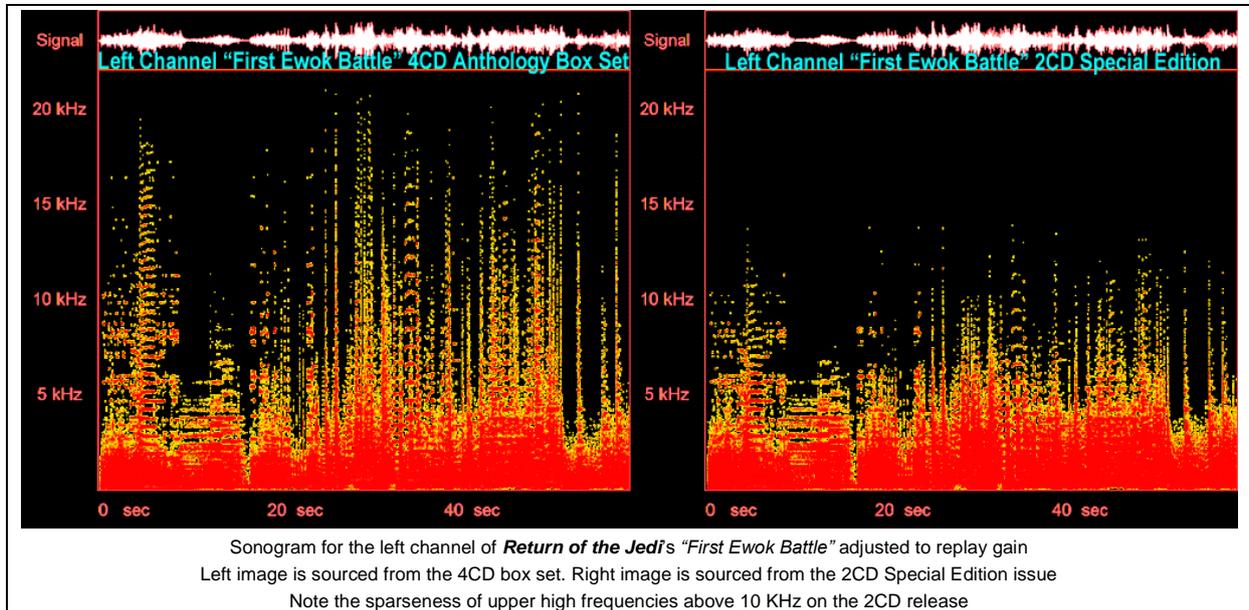
The new "Victory Celebration" finale was recorded by Jonathan Allen at Abbey Road Studio 1 and remixed for album by Shawn Murphy in Los Angeles. An oddity is that the first 11 seconds of the "End Title" were actually taken from *Empire* instead of *Jedi*. Presumably, this is because the original album overlapped the "Ewok Celebration" with the first few seconds of the "End Title" preventing it from being edited directly on. The film itself presents the latter cleanly.

Although the 2CD set is definitive, in that it offers the complete score, the 4CD set and original RSO CD remain superior sounding sources for *Jedi* by a considerable margin. The earlier releases retain a far wider frequency response and did not undergo dynamics processing or digital noise reduction during mastering. Compare "Into the Trap" or "First Ewok Battle / Fight with the Fighters" to reveal an immediate difference.

Recording the Star Wars Saga

Return of the Jedi should sound alive and accurate with a sense of the acoustic space in which it was recorded. The score demands better than dished up on the Special Edition CDs. It has sounded better in the past.

DigiPrep, the company who mastered the 2CD Special Edition discs, neglected to respond to the author's questions seeking clarification concerning their mastering decisions.



Sony Classical Reissues

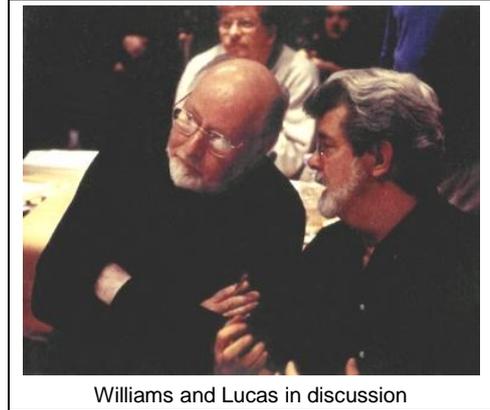
The Special Edition discs were reissued in 2004 on the Sony Classical label. The reissues utilised the 1997 content and passed it through a Direct Stream Digital (DSD) processor with little discernable sonic improvement. New artwork was generated and the informative liner notes dropped in favour of unengaging stills. The one recording studio image included in the *Jedi* sleeve is actually from the *Empire* sessions.

The 2005 *Corellian Edition* disc included musical highlights from all six films. The sound is metallic, unengaging and drenched in wildly inappropriate digital reverberation. It is certainly not a pleasant listening experience.

It is difficult to fathom why so many detrimental adjustments are made to the Original Trilogy scores when careful retrieval of signal from the original recordings and judicious equalisation should be all that is needed.

Composing the Prequel Trilogy

When George Lucas decided to continue the saga with three new prequel films, starting with *The Phantom Menace*, discussions regarding musical approach again arose. A series of attempts at a new *Star Wars* theme were made by Williams however after conference with Lucas and producer Rick McCallum, it was unanimously decided that the original themes be maintained for the new films.⁶⁷



Williams and Lucas in discussion

Despite the introduction of computer assisted compositional methods since the first films were made, Williams wrote his 2½ hour (900 sheet) score at the piano. Music editor Ken Wannberg detailed the work technique: *"It's broken down into hundredths of seconds and John will take the breakdown and go to the piano and sketch it out. Then we look at it on the video monitor with cue marks and he will go back to the piano and do some tweaking. We will run it once more and then go on to the next cue."*⁶⁸

Whilst the setting for *The Phantom Menace* was some 32 years before that of the 1977 film, Williams began writing 15 years after completing *Return of the Jedi*, commencing his work on 12 October 1998. Following the story of a young Anakin Skywalker, who would eventually become Darth Vader, Williams created a lyrical yet poignant theme for the boy that ingeniously incorporated fragments of *"The Imperial March"* thereby hinting at what would come in later episodes. The Emperor's theme from *Return of the Jedi* made a series of cameos to signify Senator Palpatine's journey to the dark side. A new and powerful theme for choir and orchestra titled *"Duel of the Fates"* became one of the most significant additions to the *Star Wars* musical palette. Williams used Sanskrit language and the Celtic poem *"Gad Goddue"* and *"Battle of the Trees"* as a source for lyrics. The lyrics in English translate to *"the tongue root a fight most dread, and another raging behind, in the head."*⁶⁹ The finale cue titled *"Augie's Great Municipal Band"* was scored for an ensemble that included synthesisers, a choir of young voices and brass. *"Some of the brass licks were done at half-tempo and then speeded up so it got to be an octave higher, where normal trumpets can't go."*⁷⁰

Herbert Spencer passed away in 1992 and his last contribution to a Williams score was for *Home Alone* in 1990. Orchestrations for *The Phantom Menace* were provided by composer Conrad Pope, John Neufeld and sporadic musician Edward Karam. Pope and Neufeld had previously provided orchestration on *Jurassic Park* and *The Lost World* plus other Williams scores leading up to *The Phantom Menace*.⁷¹

Fan reaction to the film was divided. Despite having a budget that was over 10 times the original film, together with a huge marketing effort, many criticised the scripting, editing, direction (Lucas not being an actor's director) and performances of Jake Lloyd as Anakin Skywalker and Natalie Portman as Queen Amidala. Some even questioned the title not understanding to whom or what it applied.

The score also saw divided reaction however it was generally viewed positively. Despite this, one writer criticised it as the *"worst ever Star Wars score."*⁷²

⁶⁷ "Star Wars Prequels Frequently Asked Questions v1.51." *rec.arts.sf.starwars*. 30 May 1997. Eric Mohler. 11 Jun. 2005. <http://groups.google.com.au/group/rec.arts.sf.starwars/misc/browse_thread/thread/6458234be11984a5/96d5ccea2879e954>.

⁶⁸ "Ken Wannberg Interview." *Soundtrack! Magazine*. 1999. Ford A. Thaxton. 11 Jun. 2005. <<http://www.soundtrackmag.com/kwannberg.html>>.

⁶⁹ "Duel of the Fates: Information From Answers.com." *Wikipedia*. 2005. GNU Free Documentation License. 11 Jun. 2005. <<http://www.answers.com/topic/duel-of-the-fates>>.

⁷⁰ "Ken Wannberg Interview." *Soundtrack! Magazine*. 1999. Ford A. Thaxton. 11 Jun. 2005. <<http://www.soundtrackmag.com/kwannberg.html>>.

⁷¹ "Conrad Pope." *The Internet Movie Database*. 2005. 11 Jun. 2005. <<http://www.imdb.com/name/nm0691100/>>.

⁷² "Star Wars 1 : The Phantom Menace." *Insomniac Mania*. 17 Aug. 2002. Scott Daniel Crittenden. 11 Jun. 2005.

Recording the Star Wars Saga

Attack of the Clones, released in 2002, further developed the back story of the Original Trilogy – this time featuring a Luke Skywalker aged Anakin and his forbidden romance with Padmé Amidala. It also explored the further descent of Anakin to the dark side of The Force. Critical response to the film was somewhat mixed with some judging it as superior to the first whilst others viewed it as inferior. Indeed, if votes on the Internet Movie Database are a guide it rates as a 7.0/10 compared with 6.4/10 for **The Phantom Menace**.⁷³

By the time **Attack of the Clones** was scored John Williams noted, “*With each film, I’ve been able to add to the corpus, to the body of themes. In the **Star Wars** music book, there are now about 20 themes.*”⁷⁴ The most significant new composition was titled “*Across the Stars*”, a love theme for Anakin and Padmé. This theme, the highlight of the score, uses off-kilter rhythms, set mainly for strings, conjuring feelings of the doomed lovers and their bitter-sweet romance. The rest of the score continued to employ *leitmotif* but was not as successful in offering music that lingered in the memory – loud and bombastic action cues and murky orchestral undercurrents padded much of the score. Conrad Pope and Eddie Karam both returned to provide orchestrations.

Despite these possible shortcomings, Williams made it clear that he was aware of the need to meld his compositions with the Original Trilogy. “*It’s composing backwards, and you can hear it if you listen very carefully,*” recounted the composer. “*I don’t know if it’s ever been done before.*”⁷⁵ Williams set his finishing touches on the score at the Four Seasons Hotel in Boston in early January 2002 before travelling to London to record later in the month.

Well before **Revenge of the Sith** hit cinemas in 2005 its creator recognised the burdensome expectation that it had to tie up all loose ends and preserve continuity with the original series of films. With this added pressure and the unavoidable requirement for a narrative that was more character driven, George Lucas wisely requested assistance to deliver a suitable conclusion to his 28 year old legacy. Whilst Lucas did not hand over the director’s reigns as he had done so for **Empire** and **Jedi**, he did enlist assistance with the screenplay, a dialog coach to work closely with the cast and consulted with friend Steven Spielberg on some of the action sequences.⁷⁶ The result is a film that, given time, will probably be viewed as superior to **Return of the Jedi** but not on the same level as **Star Wars** or **The Empire Strikes Back**.

As early as November 2001 John Williams had been described the events in the final chapter. “*George Lucas has narrated the last piece to me. After I heard it, I told him, ‘Just hurry up and do it, because that is a fabulous ending.’*”⁷⁷ Later, after viewing the completed film, the composer was afforded over 10 weeks to write his 2 hour and 10 minute score. Still, time isn’t necessarily a luxury. “*It is fast. It’s a very difficult schedule.*” said Williams looking back shortly before the film’s May 19 release.⁷⁸ In difference to his previous **Star Wars** film scores, the composer scored **Sith** with a noticeable absence of the expected themes. It is perhaps this reason that makes the score the most musically varied of the entire saga: brassy fast-paced motifs for the action of “*Battle of the Heroes*”; wailing and low strings to demonstrate anxiety and distraught in “*Padmé’s Ruminations*”; and choir with tubular bells to convey emotional gravitas in “*The Birth of the Twins and Padmé’s Destiny*.”

<http://www.insomniacmania.com/review_default.php?id=1>.

⁷³ *The Internet Movie Database*. 2005. Internet Movie Database, Inc. 11 Jun. 2005.

<<http://www.imdb.com>>.

⁷⁴ “Williams shapes more music for ‘Star Wars!’.” *USATODAY.com*. 13 Nov. 2001. Andy Seiler. 13 Aug. 2005.

<<http://www.usatoday.com/life/movies/2001-11-13-john-williams-star-wars.htm>>.

⁷⁵ “Williams shapes more music for ‘Star Wars!’.” *USATODAY.com*. 13 Nov. 2001. Andy Seiler. 13 Aug. 2005.

<<http://www.usatoday.com/life/movies/2001-11-13-john-williams-star-wars.htm>>.

⁷⁶ “Trivia for Star Wars: Episode III - Revenge of the Sith.” *The Internet Movie Database*. 2005. 11 Jun. 2005.

<<http://www.imdb.com/title/tt0121766/trivia>>.

⁷⁷ “Williams shapes more music for ‘Star Wars!’.” *USATODAY.com*. 13 Nov. 2001. Andy Seiler. 13 Aug. 2005.

<<http://www.usatoday.com/life/movies/2001-11-13-john-williams-star-wars.htm>>.

⁷⁸ “Williams: ‘Star Wars’ score a challenge.” *The State.com*. 2005. Martin Steinberg. 13 Aug. 2005.

<<http://www.thestate.com/mld/thestate/entertainment/11620931.htm>>.

Recording the Prequel Trilogy

In February 1999, John Williams returned to the famous Abbey Road Studios to record his score to **The Phantom Menace**. By this time the Anvil-Abbey Road relationship had ended and Eric Tomlinson had retired from recording motion picture scores. Williams chose Shawn Murphy to balance The London Symphony Orchestra for the new film having previously collaborated with the mixer on projects including **Far and Away**, **Home Alone 2**, **Jurassic Park**, **Saving Private Ryan** and the Williams on Williams Spielberg Collaboration album.



Music recording engineer Shawn Murphy
Murphy has recorded over 200 scores for clients that include John Barry, John Debney, Danny Elfman, James Horner, James Newton Howard and John Williams

Shawn Edward Murphy was born in 1948 and educated at Stanford University, graduating with a Master of Fine Arts degree in theatre technology. Murphy’s interest in music dates back to his school years where he played brass and began collecting records. He continues the latter to this day as an avid audiophile, someone with a keen interest sound quality, reproduction and technology.⁷⁹

Shawn Murphy started his career in television as the sound supervisor for the Academy Award and Film Institute ceremonies of the late 1970s. During this time, Murphy specialised in *“reinforcing and recording systems for special event shows such as award shows, big musical specials, things like that. Some of which I just designed systems for, and some of which I mixed.”*⁸⁰

Around 1981 Murphy joined the Disney Studio, initially to provide assistance in music recording and dubbing of motion pictures. By 1983 he had recorded his first film score, James Horner’s **Something Wicked This Way Comes**, and subsequently saw steady work throughout the 1980s, mostly from James Horner, with acclaimed recordings for **Batteries Not Included**, **The Land Before Time** and **Glory**. These recordings exhibit clear imaging and a punchy sound with low registers (especially bass drum) particularly exaggerated. Many have found this bass-heavy tonality appealing, citing it as the “new film score sound,” and it is certainly a Murphy trademark.

Despite a twenty-two year difference between the recording of **Star Wars** and **The Phantom Menace**, it is interesting to note that Shawn Murphy’s technique is both different from and similar to Eric Tomlinson’s.

Firstly, in difference to Tomlinson’s approach, Shawn Murphy usually employs the Decca Tree and did so for his **Star Wars** recordings. The Decca Tree involves the positioning of three condenser microphones on an inverted T shaped mount (or triangle as some call it) around 12 feet above the orchestra and behind the conductor. This technique was pioneered by Kenneth E. Wilkinson at Decca in 1954 for recording classical music and demonstrated with great success on many recordings he made, including those for conductor Charles Gerhardt.

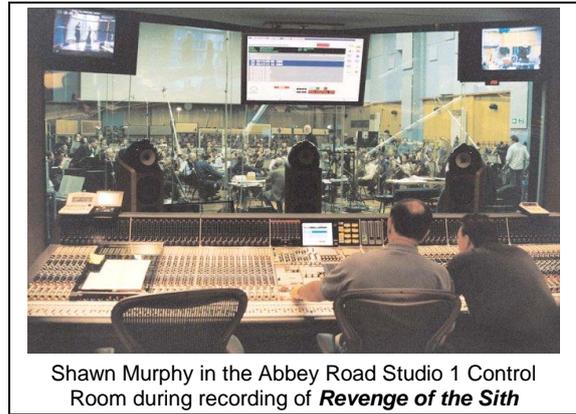
Shawn Murphy’s miking choice for The Phantom Menace	
Decca Tree	Neumann M50
Outriggers	AKG C12
Violins	Brüel & Kjær 4011
Violas	Brüel & Kjær 4011
Celli	Neumann U47
Basses	Neumann U47
Woodwinds	Schoeps MK41
Trumpets	Neumann U47
Trombones	Neumann U47
Horns	AKG C24
Percussion	Neumann KM84
Choir	Neumann KM86 Sanken CU41

⁷⁹ Fremer, Michael. “Movie Music Recording King: Part I and Part II.” *The Tracking Angle* winter 1995/96.

⁸⁰ Fremer, Michael. “Movie Music Recording King: Part I and Part II.” *The Tracking Angle* winter 1995/96.

Recording the Star Wars Saga

For the *Star Wars* prequels, Murphy used three Neumann M50 tube microphones, in accordance with the original specification, for his Decca Tree. The Neumann M50 is a highly regarded microphone that is neither *omni directional* nor *cardioid* yet behaves like an *omni* at low frequencies that becomes highly directional at higher frequencies. *"I have six M50s of my own"* counted Murphy.⁸¹ *"There just isn't anything manufactured today that does as good a job."*⁸² Outriggers were also employed in accordance with Wilkinson's refinements. These highlight the violins to the left and cellos to the right of the tree. A series of section and spot mikes were employed for additional reinforcement.



Murphy shares similarities with Tomlinson in that he also prefers to record orchestral scores in the analog domain. A Studer A80 machine was employed for the prequel scores, running at 15 IPS and encoded with Dolby SR noise reduction. *"There's an argument which says that format really gives you more dynamic range than 16 bit digital, and it certainly gives you better sound quality in the recording if you're executing it right,"* explained Murphy to interviewer Michael Fremer.⁸³ Eric Tomlinson concurs with Murphy's choice having discussed it with him during scoring of *Revenge of the Sith*. *"That is a comment which he made and I agree with him. I still prefer Dolby SR."*⁸⁴ Murphy also avoids dynamics processing and tends to eschew equalisation of individual microphone feeds.⁸⁵

The Abbey Road Studio 1 control room had seen much remodelling and modernisation since the scoring of *Return of the Jedi*. The old EMI mixing console had been replaced with a state-of-the-art 72 channel AMS Neve 88RS desk. Whilst Shawn Murphy usually prefers to monitor through his own Wilson Audio WATT VI speakers, he utilised the B&W Nautilus 801 speakers that are integrated into the Studio 1 control room. *"I think Abbey Road 1 is just stupendous, really,"* stated Murphy in 1995 when asked to name his favourite recording room. *"It's really great. It's a room that you really just don't fool with."*⁸⁶

The Phantom Menace recordings took place in February 1999. Some 16 three-hour sessions were held over a period of two weeks and were particularly gruelling as the last 20 minutes of the film had seen significant last minute change based on advice from Steven Spielberg.⁸⁷

Each cue was rehearsed once or twice before being recorded. After each take, Williams and section leaders of the orchestra listened to playbacks in the control room. Murphy, Lucas and Williams discussed any changes or improvements that could be made. If necessary, the process would be repeated several times until a satisfactory take had been captured. *"In almost two hours of music we're going to use clicks only in one brief cue,"* explained Ken Wannberg of the scoring process. *"John and I both dislike clicks as being essentially unmusical. It's important for him to obtain a real performance from the orchestra, and that can't be done with clicks."*⁸⁸

⁸¹ Fremer, Michael. "Movie Music Recording King: Part I and Part II." *The Tracking Angle* winter 1995/96.

⁸² Beggs, Josh and Thede, Dylan. *Designing web audio*. United States of America: O'Reilly & Associates Inc, 2001.

⁸³ Fremer, Michael. "Movie Music Recording King: Part I and Part II." *The Tracking Angle* winter 1995/96.

⁸⁴ Malone, Chris. Interview. 10 Jul. 2005.

⁸⁵ Droney, Maureen. *Mix masters*. United States of America: Berklee Press, 2003.

⁸⁶ Fremer, Michael. "Movie Music Recording King: Part I and Part II." *The Tracking Angle* winter 1995/96.

⁸⁷ "Making 'Star Wars' sing again." *Boston Globe*. 28 Mar. 1999. Richard Dyer. 13 Aug. 2005.

<<http://www.cswu.cz/johnwilliams/interview/iw-tpm.html>>.

⁸⁸ "Recording The Phantom Menace." *Amazon*. 1999. Mark Walker. 11 Jun. 2005.

<<http://www.amazon.co.uk/exec/obidos/tg/feature/-/210666/202-1987439-5136640>>.

Recording the Star Wars Saga

The “*Main Title*” was recorded on 5 February and would also be used to introduce *Attack of the Clones* and *Revenge of the Sith*. The orchestration remained consistent with the Original Trilogy, possibly closest to the version heard in *The Empire Strikes Back*, with subtle changes in focus to highlight snare drum together with Murphy’s engineering producing a more rounded trumpet sound.



The London Voices, led by director Terry Edwards, performed the Sanskrit language for the “*Duel of the Fates*” and were at first recorded live with the orchestra. Music editor Ken Wannberg explained the procedure after completion of scoring: “*We did it with chorus, live, and then we went back and did orchestra with a click track so it would really lock in, and redid the chorus. So obviously, we had control of it. The orchestra is LCR, the chorus is LCR, and you have surrounds.*”⁸⁹

Attack of the Clones was recorded over 14 sessions beginning on Friday 18 January and concluding on Saturday 26 January 2002. The score was recorded to two 24-track machines and encoded with Dolby SR noise reduction. In addition, a live 5.1 mix and LCR (three-channel) mixes of synths, choir and percussion were made directly to Pro Tools. Andy Dudman and Owen Tamplin were Shawn Murphy’s assistant engineers for the sessions.

Revenge of the Sith was recorded at Abbey Road in February 2005 with Shawn Murphy returning as scoring mixer, utilising essentially the same miking technique as for the previous two films. The final recording made for the *Star Wars* saga was on Thursday 17 February 2005 with the extended arrangement of “*The Throne Room*” from *Star Wars* performed in what was cited as an emotional culmination of a 28 year journey. Orchestra members were purportedly overjoyed at the opportunity to reprise familiar arrangements such as “*Binary Sunset*” from the 1977 film, having grown up listening to the music. For others who had performed on all six scores, such as trumpeter Maurice Murphy, it was a smiles-all-round occasion. “*You should see the horn players,*” remarked assistant engineer Jonathan Allen. “*They can’t stop grinning.*”⁹⁰

Shawn Murphy deserves praise for ensuring consistency within the *Star Wars* saga by continuing the wide, dynamic and rich sound established by Eric Tomlinson. Certainly the latter has praise of the former, “*Shawn does a very, very good job. He’s very relaxed about it.*”⁹¹

⁸⁹ “Ken Wannberg Interview.” *Soundtrack! Magazine*. 1999. Ford A. Thaxton. 11 Jun 2005. <<http://www.soundtrackmag.com/kwannberg.html>>.

⁹⁰ “Recording The Phantom Menace.” *Amazon*. 1999. Mark Walker. 11 Jun. 2005. <<http://www.amazon.co.uk/exec/obidos/tg/feature/-/210666/202-1987439-5136640>>.

⁹¹ Malone, Chris. Interview. 10 Jul. 2005.

Recording the Star Wars Saga

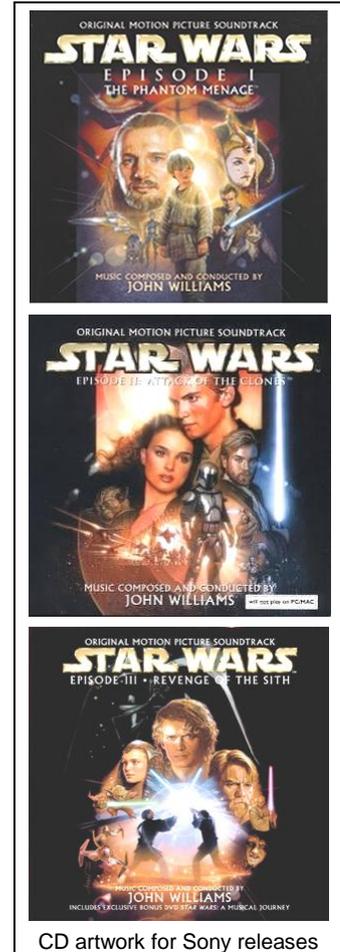
The Prequel Trilogy on CD

In difference to the Original Trilogy albums, the original recording engineer was involved with the preparation of the scores for CD and has been for many of the Williams soundtracks he engineered. Patricia Sullivan mastered the new **Star Wars** scores with Shawn Murphy supervising. *"In most cases I do the editing for the CD. I work with Dave [Collins] or Pat Sullivan who's Dave's accomplice to do the levelling and EQ and approve the CD master that we send out on most of these soundtracks."*⁹²

This type of working relationship has ensured that the dynamics and quality of the original recordings is preserved through to production of the CD. Whilst some minor limiting was used, a healthy RMS power of over 18 dB is noted during all cues. Also, in difference to fading each track to digital black, quiet ambience from the scoring stage (at around -50 dB) was maintained creating a more natural listening experience. *"What you get on the CD and in the film is the mix that was created at the session, at the time and is not altered in any way,"* explained Shawn Murphy to interviewer Michael Fremer.⁹³

On release, the soundtrack to **The Phantom Menace** received criticism that it did not include some of the score's better music. This was rectified with the issuance of a 2CD set called the "Ultimate Edition" that presented the music exactly as prepared for the film by music editor Ken Wannberg. This release appeased some fans and frustrated others because it did not present the music as originally recorded by John Williams, in the way that the Special Edition discs did. Cues were cut, tracked and repeated to fit the film and George Lucas' requirements.

At the time of writing, it is not known whether "Ultimate Editions" or "Special Editions" will be produced for **Attack of the Clones** or **Revenge of the Sith**. In the meantime, some collectors have satiated their wants by extracting cues from the various computer game releases and the films themselves.



CD artwork for Sony releases

⁹² Fremer, Michael. "Movie Music Recording King: Part I and Part II." *The Tracking Angle* winter 1995/96.

⁹³ Fremer, Michael. "Movie Music Recording King: Part I and Part II." *The Tracking Angle* winter 1995/96.

A Musical Journey DVD

The *Star Wars – A Musical Journey* DVD was included with the *Revenge of the Sith* soundtrack in something that was, cynically, probably a way to sell more soundtrack CDs than offer audiences something truly special about composer John Williams and his *Star Wars* saga scores.

The 70 minute DVD offers 16 chapters of music integrated with newly-created video montages that evoke a particular theme. Each chapter is introduced by Ian McDiarmid, who portrays The Emperor and filmed on location at Abbey Road Studio 1.



The disc is encoded for regions 1-6 and recorded in NTSC with 16x9 enhancement. As modern televisions are capable of processing NTSC, this should not be an issue for most people irrespective of their local television standard. The introduction segments are presented in 1.85:1 whilst clips from the six films are presented in 2.35:1, their original theatrical ratios. The menus are animated and also presented with 16x9 enhancement.

The video quality is fine and no prominent or distracting film artefacts or encoding anomalies are noticeable. The video is most likely sourced from the digital master prepared by Lowry Digital Images for the Original Trilogy DVDs and Lucasfilm's own digital masters for the Prequel Trilogy. The quality of *The Phantom Menace* video actually exceeds the current DVD version of the film.

Two audio tracks are present on the DVD, namely a Dolby Digital 5.1 mix in English and a PCM 2.0 mix also in English. A bit rate of 448 Kbps has been adopted for the 5.1 mix, which is significantly higher than the 192 Kbps often afforded to 5.1 tracks. The PCM mix is sampled at 48 KHz and 24-bits, running at approximately 2.25 Mbps, and is the default audio track. To accommodate both these high bit-rate audio tracks the video bit rate has been consequently lowered and is expected for a music oriented programme such as this.

Analysis of the DVD Audio

The 5.1 mix is the first time in which "isolated" music from the *Star Wars* saga has been made available to consumers in a format other than two-channel stereo. "Isolated" is perhaps not the best description as a series of dialog clips have been mixed in. Some have more dialog than others, "*Battle of the Heroes*" has a particularly large amount whilst "*The Forest Battle*" hardly any. Dialog is not always placed in the centre channel with some lines reverberated and placed into other channels. Some cues also include a few select sound effects, such as explosions, synchronised to the penultimate or ultimate music note.

The cues from *Star Wars* sound almost identical to their counterparts on the Special Edition discs and appear to come from directly from the CDs. The two-channel stereo material has been spread to the centre channel and reverb added for placement in the surround channels. Dynamic range is somewhat restricted, in accordance with the Special Edition discs, and this restriction is most evident in "*Cantina Band*," which has been shortened from the album version. Two cues, namely "*Jawa Sandcrawler*" and "*TIE Fighter Attack*," have very slightly different edit points from the CDs – although they were constructed from the same takes, making their overall duration marginally different.

Recording the Star Wars Saga

For the three cues from *The Empire Strikes Back*, it appears that the multi-track tapes have been remixed specifically for the DVD by Shawn Murphy. A central cue to the score, titled "*The Asteroid Field*," accompanies the Millennium Falcon's pursuit by Darth Vader's TIE fighters with propulsive rhythms and complex woodwind passages. For this cue, the woodwinds are more clearly defined on the DVD, with a noticeable absence of minor distortion on the piccolo runs and some of the loud brass passages that affected both the album master and 4CD set. The french horns are correctly spatially placed on the left as compared with right on the disappointing 2CD Special Edition mixes. The horns are also slightly raised in level to match the balance heard in the film, revealing extra detail in their orchestration. The violins have a new air to them with an extended upper frequency range and the basses retain their low grunt, which was something noticeably absent from the lifeless sound of the 2CD Special Edition version.

The centre channel provides solidarity and focus featuring mainly woodwinds, timpani and violas as well as bleed from other instruments, notably brasses. There is some *pizzicato* work from the violas at the conclusion of the cue that is almost inaudible in previous releases. The harp is placed to the right versus left in the film. There is also a noticeable improvement in dynamic range for this cue on DVD. The woodwinds that open the piece are about 13 dB down from the peak level compared with 7 dB for the 4CD box set and 13 dB for the 2CD set. The average RMS power is improved to about 20 dB compared with 16 dB or so for other releases.

"*Yoda's Theme*" and "*The Imperial March*" fare equally well with some effort made to remove the rumble from the opening bars of the former and cover analog splices in the latter. The "*Fox Fanfare*" that opens the DVD is sourced from Brian Risner's remix of the *Empire* recording, with left-right material spread to the centre channel and reverb added for placement in the rear channels.

The three cues from *Return of the Jedi* sound similar to the Special Edition discs with the exception of "*Light of the Force*." This cue offers discrete centre channel material that is not heard as prominently in the left and right and draws new focus to the celeste. This transfer also corrects a time-alignment (phasing) issue that affected both the 4CD set and 2CD Special Edition discs. Reverb has been employed to fill the rear channels. "*Luke and Leia*" and "*The Forest Battle*" probably would have sounded better drawn from the 4CD set transfers to take advantage of the improved dynamic range and wider frequency bandwidth that the 1993 versions offer. The latter cue has approximately five edit points that are timed minutely differently to the 2CD version (at 1:34, 1:56, 3:32, 3:45 and 3:48) making it run marginally longer but otherwise in perfect synchronisation. The penultimate cymbal crash, at 3:57, is absent from the DVD version despite being heard on all previous issues.

The Prequel Trilogy's music cues sound at least as good as their soundtrack CDs and the discrete 5.1 mixes enable listeners to perceive details previously unheard. Strangely, after "*Battle of the Heroes*," from *Revenge of the Sith*, there is a noticeable drop in overall level for the remaining music cues. This is quite obvious because "*The Imperial March*" immediately follows and is dubbed at a level much lower than expected. "*Luke and Leia*" is recorded at a higher level than "*The Forest Battle*" and the ring out at the end of "*Duel of the Fates*" appears to have been truncated.

The subwoofer remains fairly active throughout, featuring a redirect of bass from the left and right channels for *Star Wars* and *Jedi*, and a redirect from the front channels for the remaining films. The subwoofer is not as prominent in the Prequel Trilogy music cues.

The DVD is an attractive and welcome addition to a *Star Wars* music collection. It is hoped that it represents a pilot project for issuance of the film mixes of the scores on SACD or DVD-Audio, without dialog or sound effects and without any dynamic range alterations or digital noise reduction.

Refer to [Appendix D](#) for the track list of the DVD.

30th Anniversary Listening Test

May 2007 marked the 30th anniversary of the release of the first **Star Wars** film. Celebration was relatively subdued with the expected high definition video release yet to come.

During a wintry English afternoon in January 2007, the author and original recording engineer Eric Tomlinson undertook a subjective listening test in order to select a preferred digital edition of the soundtrack.

The **Star Wars** releases placed under the aural microscope comprised:

- The original RSO / PolyGram 2CD edition (1986)
PolyGram 800 096-2
Prepared for John Neal for the 1977 LPs
Henceforth abbreviated to “2PG”
- 4CD **Star Wars Trilogy Original Soundtrack Anthology** box set (1993)
Arista Records 11012-2
Mastered by Bill Wolford
Henceforth abbreviated to “4CD”
- 2CD **Star Wars Special Edition** (1997)
RCA Victor 09026-68772-2
Mastered by Dan Hersch
Henceforth abbreviated to “2CD”

The 2004 edition issued by Sony was excluded because it is ostensibly the 1997 release reprocessed through Sony’s Direct Stream Digital algorithm. The DVD edition that supplemented the **Revenge of the Sith** soundtrack has also been excluded because the **Star Wars** cues were presumably sourced from the 1997 discs and spread to fit a 5.1 configuration.

Four cues were selected as test subjects and these were:

- “*The Desert*” retitled “*The Dune Sea*” on the 2CD set
- “*The Robot Auction*” retitled “*The Moisture Farm*” on the 2CD set
- “*Ben’s Death*”
- “*TIE Fighter Attack*”

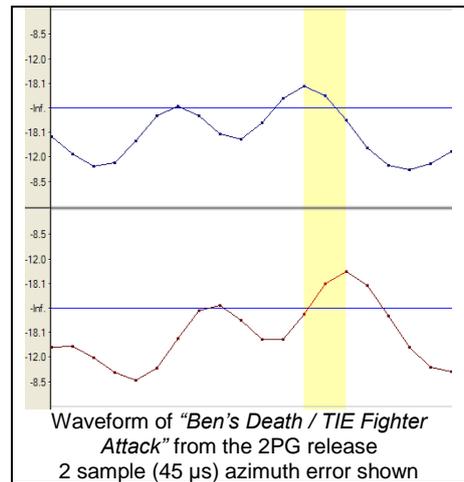
The first two cues offer *ostinatos* orchestrated predominately for strings and woodwinds whereas the latter two offer forte *bellicoso* music involving pounding timpani and extensive brass. It was considered that every section of the orchestra, in a semi-*solo* sense and in concert, would be represented by the cues selected. The study criteria included the texture and sheen of the strings, clarity and intimacy of woodwinds, strength of brass and thunder of the percussion section.

Whilst the “*Main Title*” may appear a careless omission it was excluded because the version heard on the 4CD set does not conform to the performance heard on other releases. All other editions were edited from several takes to match the version heard in the film itself. “*TIE Fighter Attack*” is one particular instance where certain bars from the 4CD set do not match the 2PG release and master edit plan adhered to for the 2CD set. The 2CD set is not immune as there are minor discrepancies in the positioning of edits – some are a bar or two different whereas others are fractions of a second different in timing.

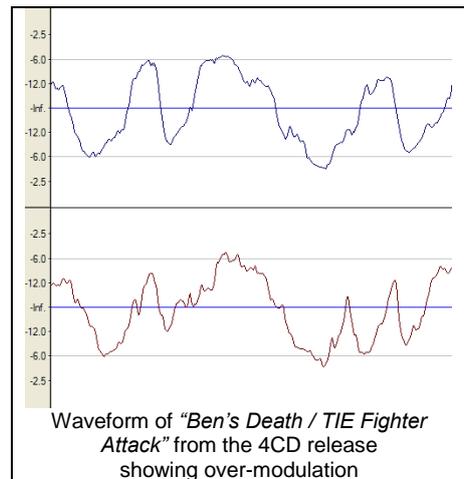
The first two cues are not represented in the same sequence on the 2CD set and were therefore combined to match prior editions.

Recording the Star Wars Saga

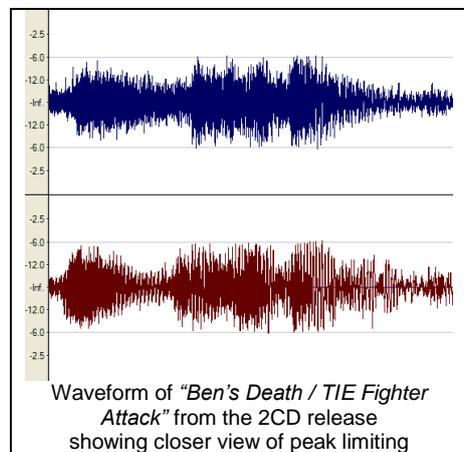
In order to remove any potential bias introduced through loudness, the music was level matched. This was performed in a digital audio workstation with a combination of aural judgement and waveform statistical analysis techniques used to achieve the correct level. A minor reduction to the *"The Desert"* and *"The Robot Auction"* from the 2CD set was made. For *"Ben's Death"* and *"TIE Fighter Attack"* the 2PG set was adjusted to 0 dBFS and the 2CD and 4CD editions attenuated by approximately 5 dB and 2 dB respectively to match. Other than adding consistent silence to the start and end of each track, together with removal of DC offset, no other adjustments were made. The cues were then transferred to a CDR and sequenced according to release date.



Engineer Eric Tomlinson considered that the closeness of perspective heard on the Special Edition (2CD) discs is representative of what he presented in the control room in March 1977. Generally, the engineer also preferred the overall tone of the 2CD edition but noted a lack of upper frequency reach. Tomlinson observed that the french horn statement of Luke's theme at the conclusion of *"The Robot Auction"* on the 2PG release had been panned towards the centre. To the engineer, this was an unnecessary modification to his mix.



When compared with the 4CD and 2CD releases, which were issued 17 and 20 years following the original, the first album still has some merit today. To this author, the original PolyGram CD release (2PG) is the only one that enables extended listening periods to be enjoyed without fatigue. It is the most dynamic and tonally soft of any digital release of the **Star Wars** score. The main negative observation is that the balance, more specifically the panning of instruments, is modified during some cues and that the midrange is rather forward.



The 4CD and 2CD releases are not without their imperfections however the 4CD box set certainly has the widest frequency response and airy sound. It is probably fair to say that, on final assessment, the best, and certainly most complete, release currently available is the 2CD edition. It is disappointing that this edition does not have the frequency extension of the 4CD issue and has undergone an unnecessary reduction in dynamic range.

Refer to [Appendix E](#) for waveforms of *"Ben's Death / TIE Fighter Attack"* from the 2PG, 4CD and 2CD releases.

It is the opinion of this author that the best sounding **Star Wars** score still awaits public consumption.

Recording the Star Wars Saga

Recommendations

Regrettably, an excellent opportunity was missed on the 30th anniversary of **Star Wars** in 2007. The time was ripe to permit the score sonic justice by creating a truly definitive audiophile issue. To the author this means the undertaking following:

- 1.) Creating an inventory of all **analog** sources of the **Star Wars** score including:
 - Two-track tapes used for the 1993 4CD **Star Wars Trilogy** box set.
 - Two-track tapes used for the 1977 **Story of Star Wars** LP.
 - Two-track tapes used by Tom Voegeli for the brilliantly realised NPR radio drama.
 - What remains of the 16-track master session tapes after a thorough search.
 - Original 1977 two-track album master.
 - Two-track reference tapes that may be in the possession of composer John Williams.
 - Extant three-track 35mm magnetic film from the original sessions.
- 2.) Creating an inventory of all multi-track **digital** sources of the score including three-channel transfers of the 35mm magnetic film (should these exist).
- 3.) Employing Steve Hoffman as the mastering engineer to give the music a “breath of life” and retain its dynamics. Hoffman’s 1995 **Raiders of the Lost Ark** mastering for DCC is unsurpassed as is his award winning work for Nat “King” Cole, Elvis Presley, Joni Mitchell, The Doors and other artists. www.stevhoffman.tv
- 4.) Engaging Hoffman to remaster all known sources directly from their analog sound units to the digital domain in high resolution.
- 5.) Editing and sequencing the cues chronologically as per the 1997 **Special Edition** discs.
- 6.) Issuing the resultant work as hybrid hi-resolution SACD discs and a limited edition double LP (see suggested sequence below).
- 7.) Preparing new liner notes that chronicle the creation of the music rather than describing scenes that it accompanies. Make extensive use of existing interviews and conduct new interviews, where possible, with the creative team including: John Williams, Ken Wannberg and members of the London Symphony including retired trumpeter Maurice Murphy.
- 8.) Using the original 1977 LP artwork.
- 9.) Issuing a DVD video disc counterpart featuring the 1980 BBC **Star Wars – Music by John Williams** documentary on the scoring of **The Empire Strikes Back**. The DVD disc could also feature extant cine-film from the **Star Wars** and **Return of the Jedi** scoring sessions and the Prequel Trilogy together with still photographs and new interviews with John Williams.

In addition the following criteria should be observed:

- 1.) Utilising the original mixes – no extra reverb, digital noise reduction, dynamics processing or other trickery.
- 2.) Engaging original engineer Eric Tomlinson as a creative consultant – he would appreciate being involved.
- 3.) Issuing hybrid SACDs with left-centre-right three-channel sound would be desirable however two-channel would be entirely acceptable.

Recording the Star Wars Saga

Suggested Audiophile Double LP Sequence

A suggested sequence for a proposed audiophile double LP edition is shown below.

The alternate “Binary Sunset” cue, “Cantina Band #2” and “Main Title” archive have been omitted due to time constraints. Some cues have been placed in a different sequence to evenly distribute music amongst the four sides. The length of Side 4 is of some concern in relation to preserving full fidelity on the vinyl medium. It is suspected that these will need to be cut at a lower level, and with more care, than Sides 1, 2 and 3. For an experienced audiophile cutting engineer, such as Kevin Gray, this should be achievable.

Side-Band	Title	Time
1-1	<i>20th Century Fox Fanfare (1954)</i>	0:23
1-2	<i>Main Title / Rebel Blockade Runner</i>	2:14
1-3	<i>Imperial Attack</i>	6:43
1-4	<i>The Dune Sea of Tatooine / Jawa Sandcrawler</i>	5:01
1-5	<i>The Moisture Farm</i>	2:25
1-6	<i>The Hologram / Binary Sunset</i>	4:10
		20:56

Side-Band	Title	Time
2-1	<i>Princess Leia's Theme</i>	4:27
2-2	<i>Landspeeder Search / Attack of the Sandpeople</i>	3:20
2-3	<i>Tales of a Jedi Knight / Learn About the Force</i>	4:29
2-4	<i>Burning Homestead</i>	2:50
2-5	<i>Mos Eisley Spaceport</i>	2:16
2-6	<i>Cantina Band #1</i>	2:47
		20:09

Side-Band	Title	Time
3-1	<i>The Millennium Falcon / Imperial Cruiser Pursuit</i>	3:51
3-2	<i>Destruction of Alderaan</i>	1:32
3-3	<i>The Death Star / The Stormtroopers</i>	3:35
3-4	<i>Wookiee Prisoner / Detention Block Ambush</i>	4:01
3-5	<i>Shootout in the Cell Bay / Dianoga</i>	3:48
3-6	<i>Ben Kenobi's Death / TIE Fighter Attack</i>	3:51
		20:38

Side-Band	Title	Time
4-1	<i>The Trash Compactor</i>	3:07
4-2	<i>The Tractor Beam / Chasm Crossfire</i>	5:18
4-3	<i>The Battle of Yavin</i>	9:07
4-4	<i>The Throne Room / End Title</i>	5:38
		23:10

Conclusions

Star Wars accumulated a smorgasbord of Academy Awards at the 1978 Oscar ceremonies. Statuettes were awarded to re-recording mixers Don MacDougall, Ray West, Bob Minkler and Derek Ball for “Best Sound.” Ben Burt was presented with a “Special Achievement Award” for his creation of alien, creature and robot voices.

The film was also awarded a BAFTA for “Best Sound,” with a total of 12 individuals recognised for their contribution to the film’s stunning aural landscape.⁹⁴ Whilst composer John Williams was suitably lauded with Academy Award, BAFTA, Saturn Award, Golden Globe and Grammy, it was Eric Tomlinson that went unrecognised and unacknowledged for his immense contribution to the sound of **Star Wars**.

The 1981 Oscar ceremonies saw the sound team once more rewarded, this time for their brilliant work on **The Empire Strikes Back**. Statuettes were presented to re-recording mixers Bill Varney, Steve Maslow, Gregg Landaker and Peter Sutton in the category of “Best Sound.” Tomlinson yet again went unrecognised for his superlative music recording.⁹⁵

During discussions, Eric Tomlinson praised the fine work of the sound team but agreed with the author’s sentiments that the music recordist should receive greater recognition for their involvement with a film’s soundtrack.⁹⁶

George Lucas reminds us that “*sound is 50 percent of the moviegoing experience.*”⁹⁷ On this basis it is fair to concede that, for a film as heavily spotted as **Star Wars**, the score counts for at least a third, if not significantly more, of the full sonic experience. In fact, it could probably be argued that the score “made the film’s soundtrack” to a degree.

Star Wars set a new standard in motion picture audio by offering sound teams an empty canvas on which to paint their soundscape and exploit the full potential of the then new Dolby Stereo four-channel surround sound format. Part of “that sound” belongs to Tomlinson who surely reinvigorated interest in detailed, spacious, dynamic and exciting music recordings that had long become buried in the mono-optical sound world of the late 1960s and early 1970s.

The author would also like to see a greater involvement of original recording engineers for preservation of scores on CD, SACD and DVD. Certainly where any remix work is performed. Eric Tomlinson shares this sentiment telling the author, “*I would have loved to been involved.*”⁹⁸ It is perhaps with some consolation that – in a world where just about every film is now shown in 6-track digital surround sound – artists such as Shawn Murphy continue the tradition of the grand days of Tomlinson and his sound, with recordings that excite a new generation of **Star Wars** fans.

Scoring mixers are rarely recognised at awards ceremonies and yet they should be. Alongside the composer, conductor, orchestrator and music editor, it is the scoring mixer that has a key role to play in defining the sound of a score. It is hoped that this chronicle will go some way to provide **you** with a greater understanding of their work and perhaps remember the names “Eric Tomlinson” and “Shawn Murphy” when you next eavesdrop your soundtrack collection.

Happy listening and “May The Force Be With You.”

⁹⁴ “Awards for Star Wars.” *The Internet Movie Database*. 2005. 13 Aug. 2005.

<<http://www.imdb.com/title/tt0076759/awards>>.

⁹⁵ “Awards for Star Wars: Episode V - The Empire Strikes Back.” *The Internet Movie Database*. 2005. 13 Aug. 2005.

<<http://www.imdb.com/title/tt0080684/awards>>.

⁹⁶ Malone, Chris. Interview. 10 Jul. 2005.

⁹⁷ “MPSE Filmmaker’s Award to George Lucas.” *Millimeter*. 2004. PRIMEDIA Business Magazines & Media Inc. 11 Jun. 2005.

<http://millimeter.com/pressroom/MPSE_Filmmakers_Award_George_Lucas/>.

⁹⁸ Malone, Chris. Interview. 10 Jul. 2005.

Recording the Star Wars Saga

About the Author

Chris Malone's professional experience in audio originates in 1997 where he co-hosted a radio programme for three years. In doing so, Malone gained proficiency in working with quarter-inch open reel, fidelipac cartridges and assembly on digital workstations. Each week, his team produced a radio serial that was recorded to open reel, digitally edited, supplemented with music and sound effects, and re-recorded to open reel for broadcast.

At about the same time the author purchased his own quarter-inch tape machines, mixing console as well as a handful of condenser and dynamic microphones. Armed with this equipment, he recorded CDs for several local music groups. Most of these were recorded in the analog domain, and often live to two-track, prior to digital editing and assembly for compact disc. In the early 2000s he acted as scoring mixer and re-recording mixer for two short film projects made by Frisky Dog Productions and Wet Newspaper Productions, respectively.

Since 2009, Malone has been involved, on a freelance basis, with film music projects run by [Film Score Monthly](#), [Intrada](#), [La-La Land](#) and [Kritzerland](#). Generally, he has provided specialist audio treatments including:

- Restoration of degraded audio signal (analog or digital drop-outs, impaired signal, etc).
- Pitch adjustments (for audio recorded or reproduced at an incorrect speed).
- Correction of azimuth (time alignment) errors.
- Mix-down of multi-track material to two-track stereo for CD release.
- Editing and sequencing of programme material.
- Mastering activities inclusive of equalisation, level matching and DDP package preparation.

A number of tools and proprietary hand-crafted techniques are used to perform this work. Malone has a particular focus on working with mono, two, three and four-track source materials from the 1950s through the 1970s.

A selected list of Malone's credits, with capsule comments, can be accessed via his [web site](#) at www.malonedigital.com.

Appendix A – Cues Remixed for The Empire Strikes Back

The 2CD Special Edition remixes of *The Empire Strikes Back* score were made in 1996 by Brian Risner from the 24-track backup tapes. The remixes are identifiable by their distortion-free yet dry, bunched and uninvolved sound with “*City in the Clouds*”, the “*Main Title*” and “*Hyperspace*” examples of the one-dimensional balance. For “*City in the Clouds*” the brasses are centred, the horns placed to the right and most of the strings, including double-basses, positioned in the centre. For “*Hyperspace*” the distinctive, propulsive nature of the strings is almost lost as most are located centrally rather than traversing the stereo field. The celeste at the introduction of “*Yoda and The Force*” is almost inaudible. In comparison, “*The Imperial Probe / Aboard the Executor*” and “*Mynock Cave*” offer Eric Tomlinson at the top of his game with enveloping and impeccably balanced sound.



The chart below lists each cue, as heard on the Special Edition 2CD set, and indicates those that offer a representation of the original mixes and which were remixed specifically for the CDs.

The Empire Strikes Back Remixes			
Disc	Track	Cue Title	Notes
1	1	20 th Century Fox Fanfare	Brian Risner remix
1	2a	Main Title	Brian Risner remix
1	2b	The Ice Planet Hoth	Brian Risner remix
1	3a	The Wampa's Lair	Eric Tomlinson film mix
1	3b	Vision of Obi-Wan	Eric Tomlinson film mix
1	3c	Snow Speeders Take Flight	Eric Tomlinson film mix
1	4a	The Imperial Probe	Eric Tomlinson film mix
1	4b	Aboard the Executor	Eric Tomlinson film mix
1	5a	Ion Cannon	Brian Risner remix
1	5b	Imperial Walkers	Brian Risner remix
1	5c	Beneath the AT-AT	Brian Risner remix
1	5d	Escape in the Millennium Falcon	Brian Risner remix
1	6	The Asteroid Field	Brian Risner remix
1	7	Arrival on Dagobah	Eric Tomlinson film mix
1	8	Luke's Nocturnal Visitor	Brian Risner remix
1	9a	Han Solo and the Princess [Start – 2:22]	Brian Risner remix
1	9b	Vader and The Emperor [2:22 – End]	Eric Tomlinson film mix
1	10a	Jedi Master Revealed	Brian Risner remix
1	10b	Mynock Cave	Eric Tomlinson film mix
1	11a	The Training of a Jedi Knight	Brian Risner remix
1	11b	The Magic Tree	Brian Risner remix
2	1	The Imperial March	Brian Risner remix
2	2	Yoda's Theme	Brian Risner remix
2	3	Attacking a Star Destroyer	Eric Tomlinson film mix
2	4	Yoda and The Force	Brian Risner remix
2	5a	Imperial Starfleet Deployed	Eric Tomlinson film mix
2	5b	City in the Clouds	Brian Risner remix
2	6	Lando's Palace	Brian Risner remix
2	7	Betrayal at Bespin	Eric Tomlinson film mix
2	8	Deal with the Dark Lord	Eric Tomlinson film mix
2	9a	Carbon Freeze	Eric Tomlinson film mix
2	9b	Darth Vader's Trap	Eric Tomlinson film mix
2	9c	Departure of Boba Fett	Eric Tomlinson film mix
2	10	The Clash of Lightsabres	Brian Risner remix
2	11a	Rescue from Cloud City	Eric Tomlinson film mix
2	11b	Hyperspace	Brian Risner remix
2	12a	The Rebel Fleet	Brian Risner remix
2	12b	End Title	Brian Risner remix

Recording the Star Wars Saga – Appendix B

Appendix B – Music Missing from the 2CD Special Edition Sets

Due to changes to suit the 1997 theatrical re-release of the Original Trilogy, the corresponding 2CD Special Edition soundtrack releases could not include music replaced in the revised films. Changes to *Return of the Jedi* meant that “*Lapti Nek*” and the “*Ewok Celebration*” were replaced by “*Jedi Rocks*” and “*Victory Celebration*” respectively. Therefore, the 1993 4CD set still holds value for being a quality source for these cues. The information below lists music absent from the 2CD sets as well as music not commercially released in any format.

Music on the 4CD Box Set

- 1.) Film version of the “*End Credits*” [4:23] from *The Empire Strikes Back*. The main difference is in the “*Imperial March*” section together with some slightly different edit points elsewhere. The film version also appears to come from 35mm magnetic film rather than tape. Both the film and album version seem to share 9 seconds of “*Imperial March*” with the concert arrangement recording.
- 2.) Album version of “*Lapti Nek*” [2:48].
- 3.) Alternate version of “*Leia Breaks The News*” [1:19].
- 4.) Film version of the “*Ewok Celebration*” [1:56] (approximates film version but is not identical).
- 5.) Album version of the “*Ewok Celebration*” [1:56].
- 6.) Concert arrangement of Jabba the Hutt’s theme. Part of this piece commences at 2:47 into “*Han Solo Returns*” [1:19].

Music Exclusive to Other Sources

- 1.) 5:30 and 7:00 Steve Thompson remixes of “*Lapti Nek*” available on a Special Collector’s Edition 45RPM 12” single released by PolyGram in 1983. The 5:30 version is in Huttese and performed by Michelle Gruska, the 7:00 version is an instrumental.

Music Not Commercially Available

- 1.) A 10 second alternate ending to “*Luke’s Nocturnal Visitor*,” which is apparently available on the *Empire* session tapes and was used in the film.
- 2.) The film version of “*The Imperial March*” with distinct cymbal crashes, more prominent horns (hard left of stereo image), *marcato*-like cellos and bass drum hits. 45 seconds of this version are heard in the film and 21 seconds appear on the *Story of The Empire Strikes Back* LP. It is most similar in orchestration to the performance conducted by Williams with the Skywalker Symphony Orchestra.
- 3.) The film version of “*Lapti Nek*” performed by the Max Rebo band.
- 4.) The film version of the “*Ewok Celebration*” that incorporates both children’s and adult choirs and features additional percussion overdubs. The orchestral accompaniment also fades in a few bars later than album versions.
- 5.) An English lyric version of “*Lapti Nek*” titled “*Fancy Man*” heard in the *From Star Wars to Jedi* documentary. [Refer to [Appendix C](#).].
- 6.) The second Max Rebo band tune that runs for approximately three minutes and heard (almost in its entirety) in the *From Star Wars to Jedi* documentary.
- 7.) A further 90 seconds of unused source music from *Jedi*.
- 8.) A 6 second insert for “*The Ewok Battle*.”

Appendix C – Lyrics to Star Wars Saga Music

“Lapti Nek” English Version – Lyrics by Joseph Williams

Feel my body growing
My bones have started glowing
The time has come for showing
That I'll shape you up and work you out
My body feels excitin'
My soul is synthesisin'
My whole frame is jumpin'
I'm workin' out and havin' fun

Work it out, you've got to move your soul
Work it out, you've got to feel the heat
Work it out, you've got to move your soul

Feel my body growing
My body feels excitin'
My soul is synthesisin'
My whole frame is jumpin'
The time has come for showing
I'll shape you up and work you out

Work it out, you've got to move your soul
Work it out, you've got to feel the heat
Work it out, you've got to move your soul

“Lapti Nek” Huttese Version – Lyrics by Annie M. Arbogast

Ab queck zenick fesi
Jup col im in na hiz jal, ooh
Wa toc peg qui dos gee pif, aah
Joc jarraz bas deg zorze zot
Jer wih tuster mo vey
Qui neb be og ezen on
Wok lapti nek seb not van
Goc jarraz bas deg zorze zot

Lapti nek, rat a ran wim joct co jappi qaff
Lapti nek, kiv ba ha top wep jex pi va bep
Lapti nek rat a ran wim joct co jappi qaff

Ab queck zenick fesi
Jem wih tuster mo vey
Qui neb be og ezen on
Wok lapti nek seb not van
Wah toc peg qui doz gee pif
Goc jarraz bas deg zorze zot

Lapti nek, rat a ran wim joct co jappi qaff
Lapti nek, kiv ba ha top wep jex pi va bep
Lapti nek rat a ran wim joct co jappi qaff

Deg zorze zot
Jem with tuster mo vey
Qui neb be og ezen on
Wok lapti nek seb not van
Goc jarraz bas deg zorze zot

Deg zorze zot
Lapti nek, lapti nek

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“Ewok Celebration” English Version – Lyrics by Joseph Williams

Freedom, we got freedom
And now that we can be free
Come on and celebrate
Power, we got power
And now that we can be free
It's time to celebrate
Celebrate the freedom
Celebrate the power
Celebrate the glory
Celebrate the love
Power, we got power
And now that we can be free
It's time to celebrate
Celebrate the light (Freedom!)
Celebrate the might (Power!)
Celebrate the fight (Glory!)
Celebrate the love
Celebrate the love
Celebrate the love
Power, we got power
And now that we can be free
It's time to celebrate
Celebrate the light (Freedom!)
Celebrate the might (Power!)
Celebrate the fight (Glory!)
Celebrate the love
Celebrate the love
Celebrate the love
Celebrate the love

“Ewok Celebration” Ewokese Version – Lyrics by Ben Burtt

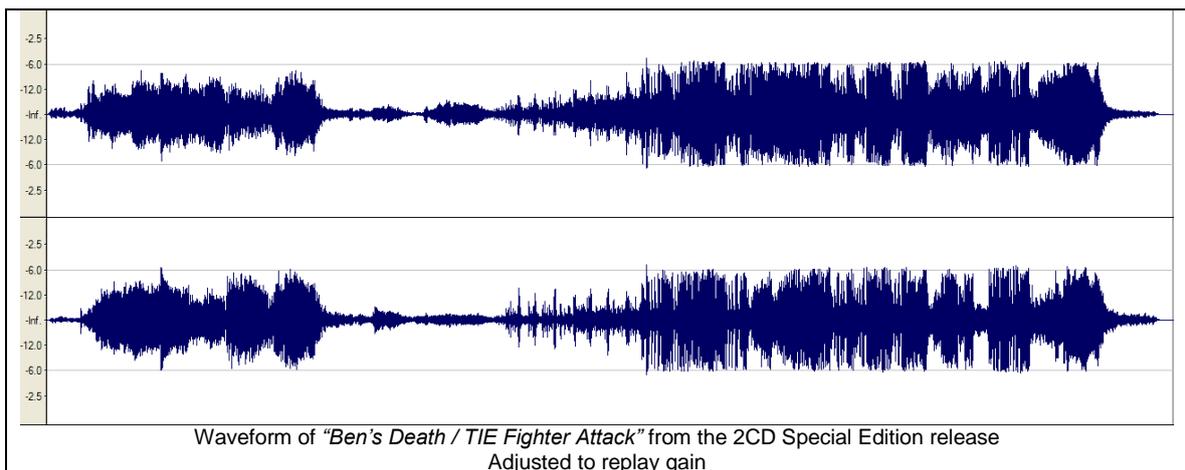
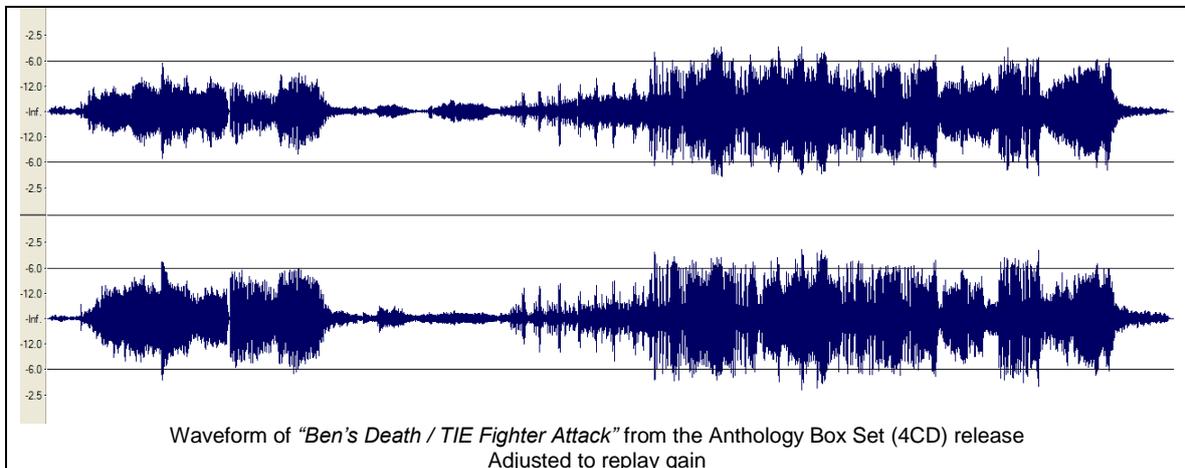
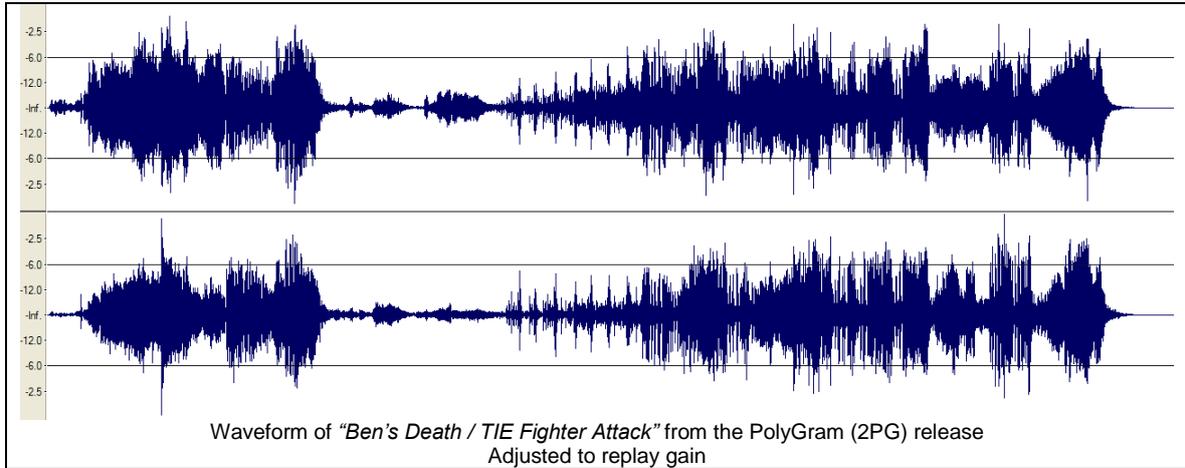
Yub nub, eee chop yub nub
Ah toe meet toe peechee keene
G'noop dock fling oh ah
Yahwah, eee chop yahwah
Ah toe meet toe peechee keene
G'noop dock fling oh ah
Coatee chah tu yub nub
Coatee chah tu yah wah
Coatee chah tu glo wah
Allay loo ta nuv
Glowah, eee chop glowah
Ya glowah pee chu nee foam
Ah toot dee awe goon daa
Coatee cha tu goo (Yub nub!)
Coatee cha tu doo (Yah wah!)
Coatee cha tu too (Ya chaa!)
Allay loo ta nuv
Allay loo ta nuv
Allay loo ta nuv
Glowah, eee chop glowah
Ya glowah pee chu nee foam
Ah toot dee awe goon daa
Coatee cha tu goo (Yub nub!)
Coatee cha tu doo (Yah wah!)
Coatee cha tu too (Ya chaa!)
Allay loo ta nuv
Allay loo ta nuv
Allay loo ta nuv
Allay loo ta nuv

Appendix D – A Musical Journey DVD Track List

Chapter 1:	A Long Time Ago "20 th Century-Fox Fanfare / Star Wars Main Title" "Fox Fanfare" recorded during The Empire Strikes Back sessions "Star Wars Main Title" recorded during The Phantom Menace sessions	[1:53]
Chapter 2:	Dark Forces Conspire "Duel of the Fates" from The Phantom Menace	[4:11]
Chapter 3:	A Hero Rises "Anakin's Theme" from The Phantom Menace	[3:06]
Chapter 4:	A Fateful Love "Across the Stars" from Attack of the Clones	[5:28]
Chapter 5:	A Hero Falls "Battle of the Heroes" from Revenge of the Sith	[3:40]
Chapter 6:	An Empire Is Forged "The Imperial March" from The Empire Strikes Back	[3:00]
Chapter 7:	A Planet That is Farthest From "The Dune Sea of Tatooine / Jawa Sandcrawler" from Star Wars	[4:24]
Chapter 8:	An Unlikely Alliance "Binary Sunset / Cantina Band" from Star Wars	[3:25]
Chapter 9:	A Defender Emerges "Princess Leia's Theme" from Star Wars	[4:22]
Chapter 10:	A Daring Rescue "Ben's Death / TIE Fighter Attack" from Star Wars	[3:51]
Chapter 11:	A Jedi is Trained "Yoda's Theme" from The Empire Strikes Back	[3:22]
Chapter 12:	A Narrow Escape "The Asteroid Field" from The Empire Strikes Back	[4:16]
Chapter 13:	A Bond Unbroken "Luke and Leia" from Return of the Jedi	[4:45]
Chapter 14:	A Sanctuary Moon "The Forest Battle" from Return of the Jedi	[4:04]
Chapter 15:	A Life Redeemed "Light of the Force" from Return of the Jedi	[2:05]
Chapter 16:	A New Day Dawns "Throne Room / Finale" from Star Wars	[5:35]

Appendix E – Comparing Star Wars Waveforms

The following images allow visual comparison of the peak-to-average ratio for “Ben’s Death / TIE Fighter Attack” from various CD releases of *Star Wars*.



Appendix F – Recording Dates and Credits

Star Wars

Recorded at: Anvil Film and Recording Group, Denham, England
Recorded: 5, 8, 9, 10, 11, 12, 15 & 16 March 1977
Engineered by: Eric Tomlinson
Assisted by: Alan Snelling

The Empire Strikes Back

Recorded at: Anvil Film and Recording Group, Denham, England
Recorded: 27, 28 & 29 December 1979
7, 8, 9, 10, 17 & 18 January 1980
Engineered by: Eric Tomlinson
Assisted by: Alan Snelling

Return of the Jedi

Recorded at: Abbey Road Studio 1, St. John's Wood, England
Recorded: 17, 21, 22 & 31 January 1983
1 & 10 February 1983
5 & 6 March 1983
Recorded at: Olympic Sound Studios, Barnes, England
Recorded: 3 & 4 February 1983
Engineered by: Eric Tomlinson
Assisted by: Alan Snelling

The Phantom Menace

Recorded at: Abbey Road Studio 1, St. John's Wood, England
Recorded: 5, 6, 9, 10, 11, 12, 14, 15, 16 & 17 February 1999
Engineered by: Shawn Murphy
Assisted by: Jonathan Allen, Andrew Dudman, Dave Forty

Attack of the Clones

Recorded at: Abbey Road Studio 1, St. John's Wood, England
Recorded: 18, 19, 20, 21, 23, 24 & 26 January 2002
Engineered by: Shawn Murphy
Assisted by: Andrew Dudman, Dave Forty, Chris Clark, Owen Tamplin

Revenge of the Sith

Recorded at: Abbey Road Studio 1, St. John's Wood, England
Recorded: 2, 3, 7, 8, 9, 12 & 13 February 2005
Engineered by: Shawn Murphy
Assisted by: Andrew Dudman, Sam OKell, Dave Forty, Robert Houston