UC Riverside
Conference Papers

Title
AI Stem-Splitting, Film Editing, and Exposure Sheets as Creative Tools in Patrick Gibson's Charade (1963): Alternate Edit Film Score for Chamber Orchestra [2026]

Permalink
https://escholarship.org/uc/item/4t87x4rw

Author
Gibson, Patrick

Publication Date
2026-06-01

Peer reviewed

eScholarship.org Powered by the California Digital Library
University of California

AI Stem-Splitting, Film Editing, and Exposure Sheets as Creative Tools in Patrick Gibson's *Charade (1963): Alternate Edit Film Score for Chamber Orchestra [2026]*

Patrick Gibson
University of California, Riverside/Long Beach Unified School District
patrickgibson2@mac.com

Abstract

Charade (1963): Alternate Edit Film Score for Chamber Orchestra (2026) is a new film score for the eponymous classic 1963 film starring Cary Grant and Audrey Hepburn, directed by Stanley Donen. It was commissioned by the Unequal Fifths Composer Collective, of which I am a founding member, and composed for my chamber orchestra, the Martians. This paper employs both technological and analytical methodologies to describe the creative process that went into the composition of *Charade: Alternate Edit Film Score*. I discuss my use of AI Stem-Splitting technology to isolate the film dialogue from the monaural audio containing the original Henry Mancini score, as well as the more expansive use of various other narrative and technical tools to edit the film, each of which helped to drive my creative process. *Charade: Alternate Edit Film Score* demonstrates the inherent creative fecundity of the transformation of original video elements from a given film in the public domain, in this case Donen's film, *Charade*, as a means of providing a programmatic framework for a new composition. This new framework was the basis upon which the newly-edited film was sequenced and to which the new musical score was composed and synchronized. It is my desire that the resulting audiovisual work provides a new musical meditation on the original film for those audience members who have seen it, while avoiding "giving away" the ending of the film for those who have not and enticing them to seek out the original film and Mancini score.

Keywords: AI Stem-Splitting; Film Scores; Music Composition; Audio Processing; Music Analysis

1.Introduction

Charade (1963): Alternate Edit Film Score for Chamber Orchestra is a work that, on the surface, appears to belong to a bygone era, Classic Hollywood, and was designed to do so. Under its surface, however, *Charade*[1] is the result of a combination of old and new technologies that were employed to immerse its audience in that era and mode of storytelling through Music, all while remaining invisible to the listener.

The use of AI Stem-Splitting technology, in particular, brought me closer to the original source material than I could ever have been in any previous era, as it allowed me to hear separate tracks of audio from the original recorded Henry Mancini score, as well as the original set audio from the film shoot itself (and, possibly, some of the post-production ADR sessions). The result was much like time-traveling back to 1963 and emphasized for me the presence of the director, actors, and artist-technicians, through the isolation of each creator's sound as they brought Donen's *Charade* to life.

[1] For the purposes of this paper, "*Charade*" will denote my piece, *Charade (1963): Alternate Edit Film Score*, and "Donen's *Charade*" will denote the 1963 film, *Charade*, directed by Stanley Donen.

AI Stem-Splitting Technology has only recently, as of this writing, become available to musicians, composers, sound engineers, audio producers, filmmakers, and the like. The current commercially available technology is still somewhat limited in its capabilities and will, no doubt, improve in the coming years. However, the promise of the technology and the avenues that it has already opened to musicians working in the fields of composition, music pedagogy, sound design, and many others, point to its occupying a prominent place in the toolkit of composers, educators, sound designers, researchers, and other practitioners. For the purposes of this paper, I will focus on its applicability to the creative process in film music composition, alongside some older technologies, and the potential for these technologies to facilitate that process for composers.

In addition to stem-splitting, I made use of the audio processing capabilities found in both the Logic Pro and Final Cut Pro applications, which enhanced the results of the stem-splitting operations, and formed the bulk of the stem-splitting and audio processing workflow.[2]

This stem-splitting and audio processing workflow made it possible for me to add a clean dialogue track to the final scene/movement of the film/piece. This enabled the narrative arc of the film's soundtrack to progress in dramatic fashion from a silent film across the initial four scenes/movements to a sound film with dialogue in the final scene/movement.

Prior to the stem-splitting and audio processing workflow, I employed the time-tested techniques of film editing and the creation of exposure sheets, the latter of which aided in the tracking of programmatic elements derived from the former. These two older technologies assisted me in transforming and shaping the narrative of the original video source material.

The creative use and the potential of these three technologies - stem-splitting, film editing, and exposure sheets - are the topic of this paper. Two of these technologies, film editing and exposure sheets, are more than ninety years old, (Thomas & Johnston, 1981), while the other, stem-splitting, is still in its infancy (Beats To Rap On, 2025). The powerful use of these tools in tandem, themselves forming a kind of hybrid of the past and present, is described here, as it relates to the creation of *Charade*, itself a hybrid of past film and present score. Following a description and analysis of the use of these materials as well as the derivation of the musical material itself, I discuss what the presence and use of these technologies may mean in the context of Music Composition and what bearing I hope they will have on its future.

2.Logic Pro AI Stem-Splitter Enhanced with Logic Pro and Final Cut Pro Plug-Ins in *Charade (1963): Alternate Edit Film Score for Chamber Orchestra*

2.1.Compositional Methodology

My background is in Digital Composition, but my specialty within that field lies in the combination of harmonic analysis, scalar analysis, Forte Pitch-Class Set analysis (Forte, A., 1973), and dodecaphonic/serial analysis employed in a compositional methodology which emphasizes analysis of compositional materials through a pre-composition process and often encompasses digital transformation of acoustic sound, analog and digital synthesis, and/or the employment of electroacoustic instruments in its orchestrations. I have termed this

[2] See Figure 1, below.

compositional methodology "tonal-serial hybridity" (Gibson, 2020). The analytical activity intrinsic to tonal-serial hybridity applies, often, to the transformation of my compositional materials via the use of digital tools within various applications, such as Logic Pro, Final Cut Pro, Max for Live, Ableton Live Suite, and Max (MaxMSP). For more on this process, see section 3.4 Composition of *Charade*, below.

2.2. Pertinent Issues Relating to the History and Development of AI Stem-Splitting (Music Source Separation)

My expertise does not extend to the mathematical and scientific principles behind the operations of these digital tools, such as the AI Stem-Splitter plug-in available in Logic Pro, but rather extends to the use of these tools through their commercially available user interfaces (UIs). As a means of clarifying some of the functions and purposes of these devices as they relate to the creation of *Charade*, I offer here, in generalized terms, a description of my workflow and a catalog of the settings of each device's UI. The process takes the reader through the employment of the AI Stem-Splitter plug-in found within Logic Pro and continues with a description of how I extended the stem-separation process, as best as was possible, to move beyond its current technological limitations and allow for a complete separation of the dialogue elements, which were contained in the original final scene monaural audio of Donen's *Charade*, from Mancini's orchestral underscore, which was present on the same audio track. Please see Figure 1, below, for a graphic representation of this process.

In evaluating the strengths and limitations of AI-Stem Splitting in the context of the composition of *Charade*, it is instructive to mention some of the history, most saliently the original design and commercial aims, of stem-splitting applications. AI Stem-Separation, referred to in academic texts as Music Source Separation or MSS (Vardhan et al., 2024) was originally developed with an initial focus on the instruments used in Western pop music ensembles (Vardhan et al., 2024):

> The earliest work on music source separation (MSS) pertained to separating a track into its four fundamental stems: vocals, drums, bass, and others…it was implemented using a variety of architectures, each focusing on different techniques such as mel-spectrograms, raw audio waveforms, unsupervised learning from unlabelled data (particularly in scenarios of low data availability), recurrent neural networks, specific frequency bands, generative adversarial networks (GANs), transformers, convolutional neural networks (CNNs), multitask learning, and DTT-Net.

These processes yielded "higher performance on specific stems," (Vardhan et al., 2024). According to Vardhan et al., "superior performance" on these specific stems "could be attributed to one common feature across" the above-mentioned "architectures," i.e. mel-spectrograms, etc., which was identified as the set of "attention mechanisms" (Vardhan et al., 2024). Per Vardhan et al.:

> Attention mechanisms allow these architectures to dynamically focus on specific time-frequency regions within audio data, enhancing the separation of overlapping sources. By selectively attending to relevant features such as vocal harmonics or rhythmic patterns, attention-driven architectures achieve higher accuracy in isolating complex musical components like vocals, drums, and bass.

Through this type of analysis, AI systems were able to learn to recognize certain instruments with fairly predictable accuracy, but only within certain genres (Vardhan et al., 2024). Reporting on their study, which centered on the use of multiple MSS architectures in tandem to achieve superior instrument recognition and stem separation, Vardhan at al. identified seven musical genres that the various stem-splitting applications were successful in recognizing with acceptable levels of accuracy.[3] These genres were: Rock, Rap, Singer-Songwriter, Electronic, Pop, Musical Theatre, Reggae and Blues (Vardhan et al.).

In their study, Vardhan et al. employed each of the four applications (MelBand RoFormer, SCNet, SCNet Large, and HT-Demucs6) to individually perform their stem-splitting operations on each of the sample tracks, and then the best version of each pass, as measured by the harmonic mean of SNR and SDR, was used for that specific stem. This procedure was used for each sample. Each application's relative success, as compared to the other three, in separating various instruments was determined, based on these results (Vardhan et al.).

Of the four applications evaluated by Vardhan et al., the HT-Demucs6 stem-splitter, with its emphasis on stem-splitting vocals, bass, drums, guitar, and piano, would seem to most resemble the Logic Pro Stem-Splitter plug-in. HT-Demucs6 was found to achieve good separation of Vocals, Drums, Bass, Guitar, and Piano - a greater variety of instruments than the other applications evaluated by Vardhan et al., but at a lower quality as measured by the harmonic mean of SNR and SDR (Vardhan et al.). Logic Pro's ostensible use of this type of AI-Stem Splitter model had a bearing on my experience with the plug-in and the additional processing that I needed to undertake to completely eliminate the elements other than the dialogue from the original audio of Donen's C*harade*.

2.3. Impact of AI Music Source Separation Model Development on AI Stem-Splitting Operations in *Charade*

Following the completion of the stem-splitting operation that I undertook for *Charade*, I discovered, upon review of the newly created tracks, that the stem which contained the majority of the underscore audio was the "Other" stem/track. Within the "Other" stem/track, any instruments or sounds which were not one of the five instruments that the AI model in the plug-in was meant to recognize (vocals, bass, drums, guitar, and piano, the latter of which will also contain additional keyboard parts present in an audio recording, such as a synthesizer) were lumped together as one composite audio waveform. As Logic had no capability of further separating these elements, and I had no need of the "Other" stem/track in *Charade*, I simply deleted it, but its existence as a catch-all points to an area of potential improvement in stem-splitting technology that Vardhan et al. mention in their report:

> …there is an opportunity to develop individual models that focus on more niche stems, such as violin or other orchestral instruments, which are often underrepresented in existing models. By exploring these areas, future research can build upon the foundation we have established, creating more versatile and precise music source separation models.

[3] As defined by their methodology. Evaluations of the accuracy of stem separation (i.e. the correct identification of the waveforms of individual instruments, which affected the overall audio quality of the resulting separated stems) were based on "the harmonic mean of Signal-to-Noise Ratio (SNR) and Signal-to-Distortion Ratio (SDR), ensuring that extreme values do not skew the results and that both metrics are weighted effectively." See Vardhan et al., 2024.

Though I did not technically need separation of orchestral elements from other musical elements in this piece, the stem-splitter's inability to fully recognize and separate these elements meant that there was residual audio from the Mancini orchestral underscore present in the Vocals (or Dialogue) stem. This lack of recognition of so-called "niche" instruments was the cause of the incomplete separation performed by the plug-in.

My previous experience with the AI-Stem Splitter plug-in, as well as other plug-ins in both Logic Pro and Final Cut Pro, helped me to complete the process of separating the dialogue track from the original Mancini score. In the recent past, I have had need of orchestral stem-separation in the preparation of video performances of my pieces for chamber orchestra. On occasion, the sound recording made at one of our live performances has been sub-standard, and I have needed to re-master the audio so that it suggests a stereo image, and so that I can exercise EQ, Compression, Reverb, and other controls over instrument groups. I do this by copying the composite audio mix track into multiple tracks and customizing the parameters mentioned above, along with others, to emphasize certain instruments in each of the copied tracks, based on various audio engineers' best practices as relates to the mastering of those instruments.

This process might involve, for example, dragging a copy of the composite audio mix, typically found in the "Other" stem, into a new track and EQ'ing and compressing it for oboe, while another copy is made and processed for harp, another for violins, and so on, until each instrument or instrument group has been processed in the same manner. Following this process allows me to bring various instruments and/or instrument groups into relief against the original composite audio.

Adding additional copies of the composite mix can add a great deal of gain to the overall stereo out mix, so care must be taken to manage the gain level, as well as Make-Up Gain in the compressor, for each track, as copies are made. This will also necessitate mixing each of these tracks against one another, as if they were single instrument tracks, recorded in a multi-track session. After the completion of this process, I pan each instrument or instrument group according to their positions on stage, creating a stereo image of the performance from, often, a monaural recording of the ensemble. The above-described process mirrors that which I used in *Charade*, post stem-splitting, to completely eliminate the residual original Mancini orchestral underscore audio.

To enhance the results of the stem-splitting operation, I employed several of these additional plug-ins in both Logic Pro and Final Cut Pro. The purpose of the application of each of these plug-ins was to remove any further traces of the Mancini score recording from the dialogue

track. The complete process, including the use of the Logic Pro AI Stem-Splitter, is outlined, below, in Figure 1, as well as in the narrative that follows.

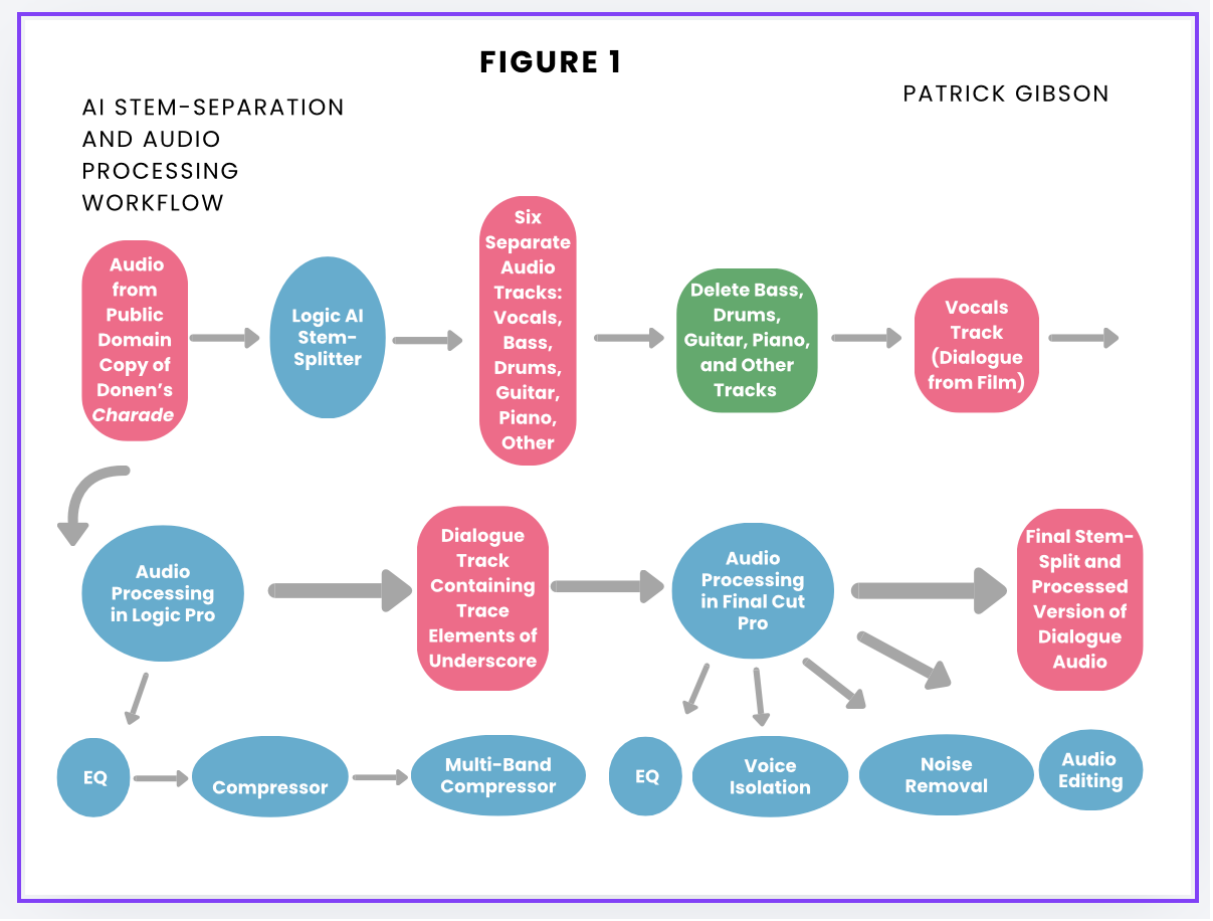


Figure 1. AI Stem-Separation and Audio Processing Workflow employed in Gibson: *Charade (1963)-Alternate Edit Film Score for Chamber Orchestra [2026]*.

2.4.AI Stem-Separation and Audio Processing Workflow

2.4.1.AI Stem-Splitting and Audio Processing in Logic Pro

The initial step was to run the original, public domain audio from Donen's *Charade* through the AI Stem Splitter in Logic Pro. I started by making a copy of the audio track of the mp4 file in Logic and placing it into a separate track from the original audio track. I then selected it, navigated to the Functions Menu and selected "Stem-Splitter". Logic Pro performed Music Source Separation on the audio and produced six tracks of audio from the track: Vocals, Drums, Bass, Guitar, Piano, and Other. The latter track, Other, has long been a feature of Music Source Separation programs (Beats To Rap On, 2025), and, as mentioned above, proved to be insufficient for true separation of the dialogue from the music in the stem-splitting operation. The Other track contained any instruments that were not identified as either, vocals, drums, bass, guitar, or piano. This meant that the majority of the Mancini orchestral score could be found on this track. Mancini does use a standard big band rhythm section in much of the score,

and the piano and electric guitar did get picked up by their respective stem-splitter tracks, while the pizzicato (stand-up) double bass found its way onto the Other track. The Drums track did pick up much of the percussion in the Mancini score, including the drum kit used in the more Jazz and Pop-based sections. Despite this, there were still audible traces of the original orchestral score left on the Vocals track, which captured the film's spoken dialogue very ably. As mentioned above, I deleted the Drums, Bass, Guitar, Piano, and Other tracks, and proceeded to filter the remaining orchestral audio from the Vocals track to create a pure dialogue track.

The trace elements of Mancini's orchestral underscore that were still present in the Vocals stem became audible at SMPTE Code 01:51:22:15.50[4] in the original public domain version of Donen's *Charade* after the completion of the stem-splitting procedure. In an attempt to get the clearest and most present vocal track possible from the public domain version of the original audio, I added the Logic Pro Channel EQ plug-in to the Vocals stem track and set it to the Voice-Over preset, which defaults to the following EQ values: The Bass frequency range is boosted to 3dB at 98Hz with a wide Q covering c. 20Hz to 500Hz; Mids are reduced to -3dB at 500Hz with a wide Q stretching from c. 200Hz to 1kHz; High-Mid Frequencies are boosted 5dB at 1.780 kHz in a narrow Q spanning c. 1kHz to 3kHz; and the High Frequencies are boosted 5dB at 5kHz over a wide Q, spanning c. 300Hz to 20kHz.

As a means of obtaining gain level parity across the dialogue track over time, as well as enhancing the presence of the dialogue, and in an attempt to ensure that none of the dialogue would be overpowered by the new score, I employed the Logic Pro Compressor in the second slot of the Audio FX signal chain. I used the "Natural Vocal" preset, which defaults to the following parameter values: Threshold (-25dB); Ratio (3.1:1); Knee (0.7); Attack (10ms); Release (48ms); and Make-Up Gain (0dB).

To further isolate the vocals from the remaining traces of the orchestral underscore, I needed first to identify the frequency ranges where the underscore was most likely contained. For this, I added the Logic Pro Multimeter plug-in to the Audio FX signal chain. Unfortunately, the frequency range occupied by the dialogue and the frequency range occupied by the orchestral underscore were largely indistinguishable, from c. 150Hz to c. 3.5kHz. As the instruments of the orchestra cover an enormous frequency range by design, it could be assumed that the vocal or dialogue portion of the Vocals stem track, was likely to be found in a narrower range than that above described. This conclusion led me to postulate that some of the sound on the "edges" of the above-mentioned frequency range belonged to the orchestra, and could be reduced using Logic Pro's Multipressor (Multi-band Compressor).

To that end, I added Multipressor to the Audio Fx signal chain, and initially reduced the two outer bands, 20Hz to c. 180Hz and c. 8kHz to 20kHz, to -20dB. Gradually, reducing all of the remaining frequency bands to -20dB individually and then in tandem, and boosting the overall gain level of the compressed sound, termed "Make-Up Gain" in the UI, to 12dB, I found some improvement in eliminating the sound of the strings, which were the predominant audible feature of the orchestral underscore. This operation also, however, produced some thinning of the sonority of the voices, with very faint traces of the string sound still audible.

Accordingly, I increased the gain levels in Frequency Bands 2 and 3 to replace the lost richness of the original audio recording of the dialogue and left the overall Multipressor Make-Up Gain at 12dB. The resultant final settings in Multipressor were as follows: Band 1 (20Hz-c.180Hz)

[4] This is the SMPTE code for Donen's *Charade*, which is available in a free, public domain version at https://archive.org/details/ecatma-Old_Time_Movie_Show_-_Charade_1963.

Make-Up Gain reduced to -20dB; Band 2 (c.180Hz-c.1kHz) Make-Up Gain reduced to -15.5dB; Band 3 (c.1kHz-8kHz) Make-Up Gain reduced to -9dB; and Band 4 (c.8kHz-20kHz) Make-Up Gain reduced to -20dB.

The following settings were the default in Multipressor and were used in the final Multi-band compression on the original film dialogue audio: The Compressor Threshold on Band 4 was set for -18.0dB, Bands 2 and 3 were set to a compressor threshold of -15dB, and Band 1 was set to a compressor threshold of -12dB. The Ratio of Band 1 was 2.511:1, and the ratios of Bands 2 through 4 were 2.022:1. Attack was set to 2.0ms for all four bands. Release was set to 61.0ms for Band 1 and 49.0ms for Bands 2 through 4. Autogain was toggled "Off".

2.4.2.Audio Processing in Final Cut Pro

The next step in the Audio Processing workflow was to bounce the audio from the newly stem-separated and processed dialogue track and open and synchronize it to the edited film in Final Cut Pro. Final Cut Pro has a limited, but nevertheless powerful, number of audio processing tools that are designed to enhance the audio quality of spoken narration, as well as musical scores. The tools that I used in the final stage of audio processing may all be found in Audio Enhancements in the Inspector of Final Cut Pro. These tools are accessed by selecting the speaker icon at the top of the Inspector menu and scrolling under the "Audio Enhancements" section of that menu. I employed, from within this section, Equalization, Voice Isolation, and Noise Removal. These tools, when applied together, very nearly completely eliminated the sound of the Mancini orchestral score from the dialogue track, except in four instances, where it could be very faintly heard.

For the Equalization tool, I used the default setting, "Voice Enhance," which is a graphic equalizer that is pre-set to the following gain values at the pre-set frequencies: 32Hz at -2dB; 64Hz at -3dB; 128Hz at -3dB; 256Hz at 1dB; 512Hz at 4dB; 1kHz at 4dB; 2kHz at 3dB; 4kHz at 1dB; 8kHz at 0dB; and 16kHz at -1dB.

As the dialogue track was affected by the presence of the Mancini orchestral underscore only at isolated SMPTE Codes, I edited the soundtrack at those points, cutting and moving the audio in those sections to a new audio track, and attempted to run a customized version of the "Voice Enhance" Equalization tool at only those moments. See Figures 2-4, below, for a list of the SMPTE Codes and the pitch classes still audible after the above processing.

No Q control, as far as I could gather, was possible in the Equalization tool, but I did try to lower the gain of the 128Hz and 256Hz frequency bands in the hope that the adjustments would eliminate the remaining pitches in the Mancini orchestral underscore, which were: E3 (164.81Hz), A3 (220Hz), B3 (246.94Hz), and C4 (261.63Hz). Unfortunately, lowering the gain in these frequency bands detracted from the timbral quality of the dialogue audio, leading to an noticeable inconsistency in the dialogue sound, while simultaneously failing to significantly lower the gain of the remaining Mancini orchestral underscore pitches. I subsequently returned the 128Hz and 256Hz frequency bands to their default gain positions, -3dB and 1dB, respectively.

Figure 2: Stanley Donen's *Charade* (Public Domain Copy) - SMPTE Code Locations for Gibson: *Charade (1963) - Alternate Edit Film Score for Chamber Orchestra*, Scene 5/Movement V. "Did You Say Marriage License?"	
Project Frame Rate 25fps	**Logic Pro SMPTE Code* (Entire *Charade* Film, Directed by Stanley Donen, 1963)**
Beginning of Gibson: *Charade (1963)-Alternate Edit Film Score for Chamber Orchestra*, Scene 5, Movement V. "Did You Say Marriage License?"	01:49:08:14.05
Audio Edit 1: Orchestral Sonority under Regina's line, "Starting with his own…"	01:51:47:12-01:51:47:15
Audio Edit 2: Violas and Violoncelli Playing A3 and E3	01:51:54:15 - 01:51:55:01
Audio Edit 3: Violas and Violoncelli playing underneath Regina's line, "…that one…"	01:51:56:20 - 01:51:56:24
Audio Edit 4: Complete Section Cut to Enable Separate Audio Processing	01:51:53:11 - 01:51:58:15
	*Logic Pro SMPTE Codes have been adjusted by subtracting one hour to match standard SMPTE Code Format. For example, 02:49:08:14.05 is listed here as 01:49:08:14.05. Logic adds an hour in its SMPTE Code Clock. The running time of Donen's *Charade* is 113 Minutes, thus, 02:49:08:14.05 is not a possible SMPTE Code in the film.

Figure 2. Stanley Donen's *Charade* (Public Domain Copy) - SMPTE Code Locations for Gibson: *Charade (1963)-Alternate Edit Film Score for Chamber Orchestra*, Scene 5/Movement V. "Did You Say Marriage License?"

Next, I applied the Voice Isolation tool and set the amount to 100%, after having auditioned lower percentages and determined that they were not eliminating the audio of the Mancini underscore. This helped to eliminate a bit more of the underscore audio, but also took much of the foley track and sound effects track with it. I decided that losing some of the foley was not essential to the needs of my project, so I maintained the Voice Isolation level at 100%. I did notice, however, that the audio was becoming slightly denigrated as a result of all of the processing in Final Cut Pro, but not enough, again, to meaningfully affect the quality of the performance of the music alongside the film in concert.

The final step, then, was to apply the Noise Removal tool, which, after some experimentation, I set to 82%. This allowed me to maintain consistency in the timbre of the dialogue track, while eliminating many vestiges of the Mancini underscore.

After all of the audio processing in Final Cut Pro was complete, there were still, as mentioned above, four audible instances of the Mancini underscore present during the dialogue between Cary Grant and Audrey Hepburn's characters (Brian Cruikshank and Regina Lampert,

respectively). First, within the SMPTE Code range 01:51:47:12 - 01:51:47:15, there was a sonority just prior to the onset of Regina's line, "Starting with his own…". Next, from 01:51:54:15 - 01:51:55:01, the violas and violoncelli could be heard playing A3 and E3 on an eighth note rhythm. See Figure 3, below.

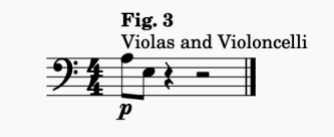


Figure 3. Audible Mancini Underscore Excerpt from Donen's *Charade*, found within SMPTE Code Range 01:51:54:15-01:51:55:01.

The third instance was audible from 01:51:56:20-01:51:56:24. Here, the violas and violoncelli could be heard playing a two-eighth note, one quarter note rhythm on A3, B3, and C4, in succession. See Figure 4.

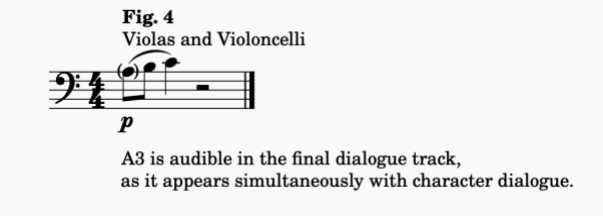


Figure 4. Audible Mancini Underscore Excerpt from Donen's *Charade*, found within SMPTE Code Range 01:51:56:20-01:51:56:24. Parentheses around A3 indicate that the pitch does appear in the final dialogue track, as it occurs simultaneously with character dialogue.

A3, as pictured in Figure 4, occurs simultaneously with Regina's line, "…that one…", and so is present, but is nearly inaudible in the final dialogue track.

Lastly, as mentioned above, I cut out and removed to a separate audio track the last section of the dialogue audio from 01:51:53:11-01:51:58:15. This enabled me to separate processing for it, and remove any remaining vestiges of the Mancini underscore audio. Within this new track, I could change, if necessary, any of the values and/or parameters in the audio tools discussed above for this cut section only, while maintaining the values set for the other previously discussed sections of the audio.

In this cut section, after experimenting with various parameter changes in the Audio Enhancement tools referred to above, I changed the amount of Noise Removal to 100%. The additional boost in Noise Removal swept out the more prominent features of the Mancini underscore still present in this SMPTE code range, without affecting the timbral quality of the dialogue audio. The Noise Removal tool, then, permitted me to maintain timbral consistency across the entire dialogue audio track (both the cut section and the sections remaining in the main audio timeline) over the course of the fifth scene/movement, while further suppressing the Mancini underscore audio.

At this point, I dragged the timeline scale to the smallest possible time increment values and carefully cut individual frames from the abovementioned cut sections (see Figure 2, above, for the SMPTE code locations in question) just before and after the characters' dialogue in an effort to completely eliminate any remaining audio from the Mancini underscore. Save for the one A3 shown in Figure 4, above, all traces of the Mancini score were eliminated in this final step, and the stem-splitting and audio processing workflow was complete.

3.Exposure Sheets and Film Editing as Creative Tools in *Charade (1963): Alternate Edit Film Score for Chamber Orchestra*

3.1.Background to the Creation of *Charade (1963): Alternate Edit Film Score for Chamber Orchestra*

Donen's *Charade* has been entertaining audiences for more than sixty years and is, by any measure, truly a classic film. It features some of the finest performances of Cary Grant and Audrey Hepburn's careers, and is arguably one of the most beautiful films of its era. *Charade (1963): Alternate Edit Film Score* was written as a commission from the Los Angeles-based composers collective, Unequal Fifths, of which I am a founding member. It was composed for my chamber group, the Martians, a modified Pierrot Ensemble with the following instrumentation: Oboe, B-Flat Clarinet, Piano, Synthesizer, Electric Guitar, Harp, Violin I, Violin II, and Double Bass.

This ensemble contains a great timbral and orchestrational potential, and the musicians, themselves, have proven to be outstanding interpreters of my work, as well as that of my colleagues. Excited about the challenges and possibilities of performing a piece live to picture, the members of the ensemble spared no effort in preparing for the premiere performance at ArtShare L.A., in Los Angeles, CA, on February 21, 2026. As the technical requirements of the performance were greater than any of those we had given in the past, multiple informal tech meetings, as well as a half dozen rehearsals, were held, all of which assisted us in developing a plan for ensuring the best possible synchronization to the three film scores[5] we performed that evening, as well as ensuring the best possible premiere performance of each film score.

For this concert project, which we named *The Martians at the Movies*, our brief was to compose new film scores to films that were in the public domain. Early in my search for material that fit that requirement, I realized that Stanley Donen's *Charade*, one of my favorite films, was in the public domain. This presented me with a dilemma - either find a different movie, preferably a silent movie, for which I could compose a new score without the baggage of being unduly influenced by its previous score and, in addition, avoid the risk of asking those members of the audience who had already seen the original film to cast aside their memories of Henry Mancini's iconic score, or choose *Charade* and stare down the legacy of one of Hollywood's greatest composers and compose new music for this classic film. As hard and as long as I tried to fight it, I kept finding myself coming back to *Charade*. I finally succumbed and wrote the best score I could for it.

[5] The three film scores performed by the Martians Chamber Group that evening were, in program order: *Frankenstein (1910)*, directed by J. Searle Dawley, music by Christine Lee [2025]; *The Enchanted Sedan Chair (1905)*, directed by Georges Méliès, music by Christian Dubeau [2025]; and *Charade (1963): Alternate Edit Film Score for Chamber Orchestra*, directed by Stanely Donen, music by Patrick Gibson.

Charade ranks high on my list of favorite films for many reasons, not the least of which are its stunning technicolor beauty (characteristic of its era), its blend of comedy and thrills, and the pitch-perfect Rom-Com dialogue and action. All of these elements are the work of the masterful director, Stanley Donen (*An American in Paris* [1951] and *Singin' in the Rain* [1952]). I must also acknowledge the enormous debt owed by me to the legendary, original score by the incomparable Henry Mancini. I consciously tried to avoid certain stylistic choices, musical gestures, and orchestrations that Mancini used in his score, out of respect, as much as anything else, but there are, undoubtedly and unavoidably, some similarities between our scores. I could not fail to be influenced by his subtle, powerful, and, yet, at times perfectly comic scoring of this film, with which I am very familiar. In fact, some of the things that Mancini did are so brilliant and so perfect for the film that it was nearly impossible to avoid doing some version of them myself. They are simply "right" for the film.

That said, it is my hope that my new score will be seen as a bit of a tribute to Mancini, as well as an alternate musical possibility, and, thanks to very heavy editing of the film, not truly analogous to Mancini's work. My music for *Charade* is the result of the many edits that I made to the film, and an expression of my love for it, as well as my musical re-telling of this beautiful (and sometimes surprising) love story, full of twists and turns.

3.2. Film Editing as Tool for Shaping the Dramatic Arc and Musical Form of *Charade*

My compositional methodology for the creation of this piece was as follows. I first began with the source material, the film itself, and then spotted the entirety of the film, annotating nearly every scene in the film with a description of the action and the beginning and ending SMPTE codes for each of those scenes. I then reviewed my exposure sheet and began annotating the entires to suggest cuts, in an effort to get the movie, which has a running time of 1hour and 53 minutes, down to about 20 minutes. As the project evolved, in the interest of narrative and musical coherence, I continued to edit the film down to 15 minutes total running time.

Studying and analyzing the original film in this way gave me a strong sense of its dramaturgy, and aided me in determining which 15 minutes of the film was essential to the story I was trying to tell. The resulting story, really a series of slightly disjunct, but related scenes, follows the same characters through some comical and tumultuous situations. These scenes, with their starting and ending points, as well as their transitions, dictated the music that I composed. The edited film, itself, had a comprehensible dramatic arc, even without the dialogue, but one without much detail. It presented more as a series of impressions, which I found fertile ground for a programmatic piece, capable of being synchronized to the edited film, as well as being performed in concert without the visual element. Without the film, it can be understood as a suite, featuring some symphonic forms, albeit less constricted in its selection of those forms than a traditional symphony, and smaller in scale.

3.3. Exposure Sheets in the Evolution of the Edited Film and the Selection of the Five Scenes for Scoring and Synchronization in *Charade*

Exposure sheets are described in the following way by the legendary Disney animators, Frank Thomas and Ollie Johnston, in their book, *The Illusion of Life: Disney Animation* (Thomas and Johnston, 1981):

> Each space between the lines of the "exposure sheet" represents a frame of the film and tells the cameraman how to expose the drawings in the scene…The exposure sheet also shows the placement of the dialogue, the length of the scene, and any special instructions.

In my own use of exposure sheets over the years to catalog the actions and moods of a given film, I have modified the parameters of the Disney-designed exposure sheet to include the SMPTE Code, the action in a scene, the key or tonal area used, the number of measures of in a given scene, the time in minutes and seconds, and any notes that I make on that particular moment or scene in the film. This last section of the exposure sheet is most analogous to Thomas and Johnston's "special instructions," mentioned above (Thomas and Johnston, 1981).

By making note of the key or tonal area of certain scenes on the exposure sheet, for example, I can determine the relationship of the current key or tonal area to the overall narrative and/or programmatic arc of a film. The exposure sheet as used by composers, thus, is a way to keep track of all visual elements in a scene, situate them in time using SMPTE Code, calculate the amount of music one needs to compose, make note of musical features in relation to the overall program of the piece, and make any pertinent notes regarding the scene.

The five scenes that I selected for *Charade*, based on my spotting work, are as follows: I. a) Pre-Titles; b) Opening Titles, based on SMPTE Code Range[6] 00:00:08:00 - 00:03:04:12; II. Regina's Apartment, based on SMPTE Code Range 00:03:03:14 - 00:04:50:17; III. Nightclub Shenanigans, based on SMPTE Code Range 00:04:50:18 - 00:07:14:17; IV. An Evening Spent Running Around, based on SMPTE Code Range 00:07:14:18 - 00:11:20:13; and V. "Did You Say Marriage License?", based on SMPTE Code Range 00:11:20:14 - 00:14:40:08.

This set of scenes, run sequentially without stopping, is the formal architecture of my piece. Within each of the five scenes/movements, I employed various musical forms, including established forms, as well as bespoke forms, that best supported the imagery on screen. See Figure 5, below, for a demonstration of how the film editing process helped me to shape the original film into the version that ultimately was synchronized to the music. The exposure sheet found in Figure 5 represents an intermediate phase in the creation of *Charade* and includes sections that I later cut from the edited version of the film. It serves to give some idea of the evolution of the project.

Figure 5: Exposure Sheet (Third Edit)

Movement Title	SMPTE Code Start	SMPTE Code End	Tempo	Number of Measures	Elapsed Time	Total Minutes in Cue	Total Seconds in Cue	Editing Notes
I. a) Pre-Titles	00:00:08:00.07	00:01:00:18.48	60	15	0:52:18.48	0	52	Retain Entire Sequence
I. b) Opening Titles	00:01:00:18.48	00:03:04:12.57	88	50	2:03:18.70	2	3	Retain Entire Sequence
II. Swiss Meet-Cute	00:03:04:12.57	00:04:12:13.00			1:08:00:22	1	8	Retain Entire Sequence
III. Regina's Apartment								

[6] All SMPTE Codes denoting the scenes that I selected from Donen's *Charade* are the SMPTE Codes in the edited final version of the film, as measured by Final Cut Pro. The edited version of the film was created by me for this project. The edited film has a running time of 14 minutes and 40 seconds.

Figure 5: Exposure Sheet (Third Edit)								
Movement Title	**SMPTE Code Start**	**SMPTE Code End**	**Tempo**	**Number of Measures**	**Elapsed Time**	**Total Minutes in Cue**	**Total Seconds in Cue**	**Editing Notes**
IV.. Nightclub Shenanigans: a) "Evidently, We're the Floor Show!"; b) Menace with Matches	00:07:50:19.20	00:12:06:20.70			4:16:01.50	4	16	Retain Entire Sequence
V. Shower Scene	00:18:34:07.21	00:20:34:06.30			1:59:24.09	1	59	Retain Entire Sequence
VI. Le Carré Marigny	00:20:34:07.03	0025:43:17.72			5:09:10.69	5	9	Re-Title as "Le Carré Marigny": Shorten to Include Only Each Character's Realization that the Stamps Are the Most Valuable of the Items in the Handbag. **Cut:** 00:20:34:07.03 - 00:23:12:08.79. **Keep:** 00:23:12:09.00 - 00:24:21:05.78
VII. a) An Evening Spent Running Around	00:25:43:19.06	00:39:24:16.78			13:51:22.72	13	51	Cut 00:25:43:19.06-00:27:37:07.79; Include Only the Following Elements: 1) Initial Chase into Paris Metro (00:27:37:08.00-00:30:11:16.63); 2) Colonnade Stand-Off and Gun-Fight (00:32:31:09.02-00:33:47:08.71 and 00:34:31:11.09-00:34:38:04.67 and 00:34:54:05.00-00:35:00:24.08); 3) Close-Call at the Theatre (00:35:40:13.17-00:38:29:04.79) **Attaca** [Next Cue]; 4) Cab-Ride and Lovers Reconciled (00:38:29:05.00-00:39:40:16.77) **Attaca** (Next Cue);
VII. b) Finale: "Did You Say 'Marriage License?'"	00:39:24:17.01	00:42:18:03.60			2:54:11.59	2	54	Cut to Entrance to Office (00:39:43:05.19-00:40:27:12.18); Cut to "Of all the mean, rotten…" and "Did you say 'Marriage license?!!'"; Play to Fade Out.(00:41:03:20.64-00:42:17:22.35)
								General Editing Procedure: 1) Mark all Cut Points in Final Cut Pro; **2)** Cut According to Instructions in Edit Notes Only After All Cuts Are Marked; **3)** Share Print and Load into Logic; Notate SMPTE Codes for All Cue Entrances and Exits in New Exposure Sheet; **4)** Add Streamer to Beginning of Score for Tempo (from Fade In)

Figure 5. Exposure Sheet (Third Edit) for Gibson: *Charade-Alternate Edit Film Score for Chamber Orchestra [2026]*

The completion of the Exposure Sheet phase of the composition process comprised cutting the original film based on the instructions in the Editing Notes section of the exposure sheet. Additionally, I used Final Cut Pro to apply transition generators (or effects generators) to the newly edited film. Between scenes, for aesthetic and dramaturgical reasons, it was necessary to establish these visual transitions. For this, I employed several of the various Transitions tools, found within the Transitions Menu of Final Cut Pro, located in the top right corner of the Timeline. I used a different transition for each of the scenes to help establish mood, as well as establish the starting and ending points of each scene/movement.

Final Cut Pro played numerous other roles in the creation and dissemination of *Charade*. For example, I was able in Final Cut Pro to audition numerous versions of the final mixes of the completed MIDI Audio for my players, who were all given both a click and non-click track version of the film and score with which to rehearse the piece in their studios. During the Stem-Splitting and Audio Processing phase of the composition where I attempted to create a clean dialogue track for the fifth and final scene/movement (see Section 2.4.2, above), I was able to ensure a clean synchronization of the newly processed dialogue track with the edited film in Final Cut Pro. Lastly, after the debut performance, which was ably recorded by my son, Sean Gibson, and my daughter-in-law, Hallie Campos, both Music educators, I was able to easily synchronize the final performance audio with the edited film in Final Cut Pro.

3.4.Composition of the Music of *Charade*

Having determined the visual frame of the piece, I could begin composition of the music. The musical material of *Charade (1963): Alternate Edit Film Score for Chamber Orchestra* is all derived, including in the fifth and final movement, from the two themes stated at the outset of the film in the Pre-Titles and Opening Titles section. I used the first section of the film as an overture, during which the musical themes are established. I selected that portion of the movie to score because I was enchanted by the period animation in the credit sequence. Just as Donen did in the original film, I also opened on the scene of a body being thrown off a train to establish the mood and tone of the picture, as well as the central mystery in the film's narrative. The scene was simply too important, ant too iconic, to ignore.

Within that first combined scene, the two main themes are played in succession, and the music of the Title Sequence is written in sonata form. Theme I is the "danger" theme used in the edited version of the film, and appears in many variations throughout the film, most prominently in the fourth scene/movement, "An Evening of Running Around." Theme II is the "love theme" for Regina and Brian, and appears during the most intense moments of their interactions in the edited version of the film. We hear it prominently in variation form in the second and fourth movements. It also forms the basis of the of the motive for the invention in the fifth movement, as well as all subsequent material. See Figures 6 and 7, below, for Themes I and II, as notated in their original appearance in the Opening Titles scene in the first movement.
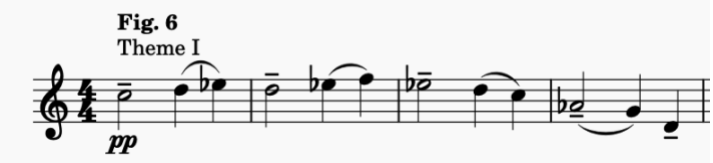


Figure 6. Theme I of Gibson: *Charade-Alternate Edit Film Score for Chamber Orchestra [2026]*, as it first appears in I. b) Opening Titles
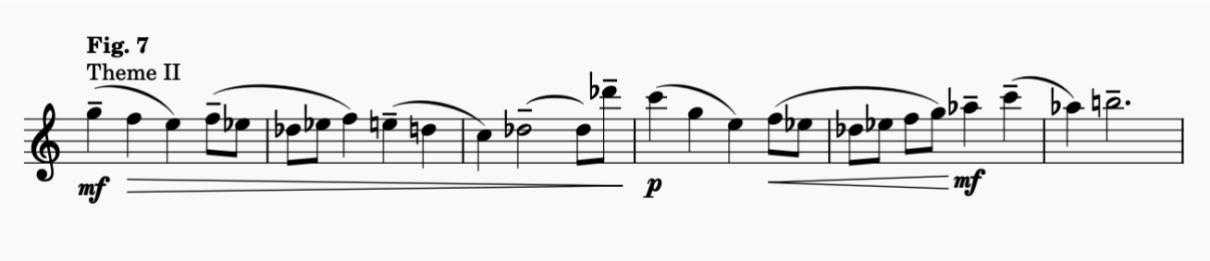


Figure 7. Theme II of Gibson: *Charade-Alternate Edit Film Score for Chamber Orchestra [2026]*, as it appears in I. b) Opening Titles

After the completion of the music for the first four scenes/movements of the edited film, and again taking into account the dramaturgical work I engaged in at the beginning of the composition, via film editing and the creation of various versions of my exposure sheet, I decided that a strong contrast was necessary at the outset of the fifth movement, as a means of signaling to the audience that this edited version of the film was coming to an end. This was especially necessary due to the fact that some of the narrative elements of the original film were, as a result of pragmatic and aesthetic choices in the editing process, left out. In an effort to create that contrast on a structural level, both in terms of the structure of the piece and in terms of the structure of the larger debut concert program, in which *Charade* would serve as the final selection, I eliminated the dialogue from the first four movements, and then added the dialogue back to the soundtrack in the fifth and final movement, "Did You Say Marriage License?"

Aesthetically, it was my intention to create a Classic Hollywood film score for the final scene, notwithstanding the excellent and unsurpassable Henry Mancini score for this section of the original film, both as a fitting tribute to this beloved Rom-Com classic, as well as a thematically appropriate conclusion to a night of classic movies in Downtown Los Angeles. I built the movement on the idea of a two-part invention, since the entirety of the final scene of the film is a dialogue between Regina Lampert and Brian Cruikshank, the protagonists in the film. The invention builds in complexity, very gradually over time, and concludes the scene and the entire piece with a sweeping, yet understated major seventh sonority.

I felt that this harmony both pointed to the original composer, Mancini, as a Jazz arranger and composer, his Jazz background being a prominent part of his musical voice in film and concert music, as well as to the bygone era in which *Charade* was made. The final section, and, indeed, the final sonority, were composed in an effort to reach back sixty-plus years to our cinematic forebears, as well as a gesture of appreciation that concludes the piece.

Lastly, elements of tonal-serial hybridity were in evidence in a few key moments in *Charade*, most especially in the second and fourth movements, those darkest in tone. For this piece, as is my typical practice, I prepared a dodecaphonic series based on the melodic-thematic material that I had composed for *Charade*. I do this so that, should the need arise, I can extrapolate distant but related variations of the original materials, and blend the mysterious melodic phrases and fragments, as well as the deep, bracing sonorities of the series, into my tonal material. This provides smooth transitions in and out of serialism and tonality, and was practiced regularly by the post-modern composers of the Walt Disney Studios, among others of their contemporaries in the film and concert music worlds.[7] See Figures 8-10, below, which contain images of the matrix, simple rotations, and transpositional rotations that I employed in *Charade.*

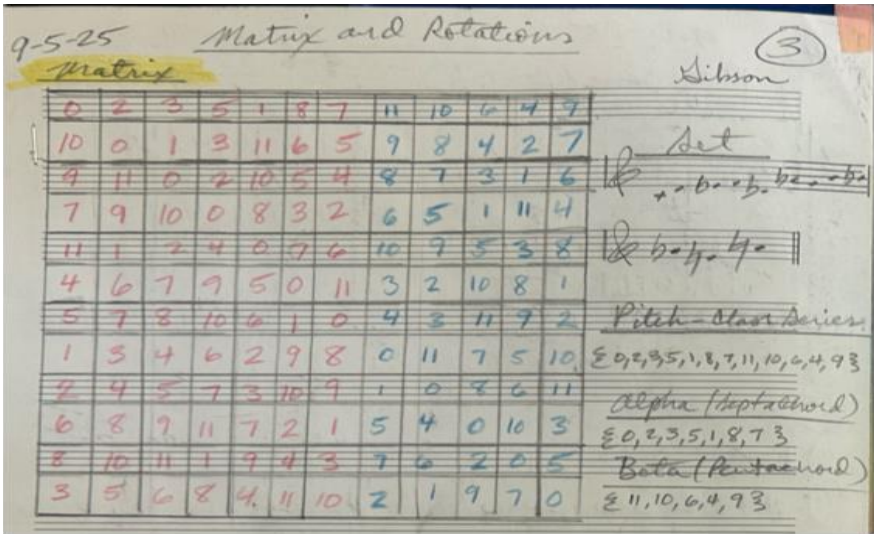


Figure 8. Manuscript Dodecaphonic Matrix Employed in Gibson: *Charade (1963)-Alternate Edit Film Score for Chamber Orchestra [2026]*. Pitch-Classes are indicated by their numerical value on the Pitch-Class Clock Face. See Straus, 2005.

In this case, at the start of the second scene/movement, II. Regina's Apartment, I wanted Regina to be greeted by unnerving harmonies as she entered her ransacked apartment in Paris. These sonorities helped to build tension and served the thriller aspect of Donen's *Charade*. To ensure a smooth transition to these sonorities from the tonal material which appeared in the previous scene/movement, I employed rotations based on the dodecaphonic matrix (see Figures 9 and 10), starting on the very first beat of the second movement, which contained three pitch-classes in common with the final sonority of the first movement, I. a) Pre-Titles; b) Opening Titles; in this case, F-Sharp {6}, A{9}, and B-Flat {10}. The sonority that opens up the second movement, {3,6,9,10}, flows out the final sonority of the previous movement, {9,10,0,6}, disorienting the listener while avoiding the appearance of randomness in the music and maintaining its connection to the preceding material. I used similar methods in driving and connecting sonorities and motivic material in the fourth movement, "An Evening Spent Running Around," again ensuring connectivity of the musical material and the overall work, thus enhancing its comprehensibility and programmatic arc. See Figure 11, below.

[7] For more of this discussion, see my dissertation (Gibson, 2020).

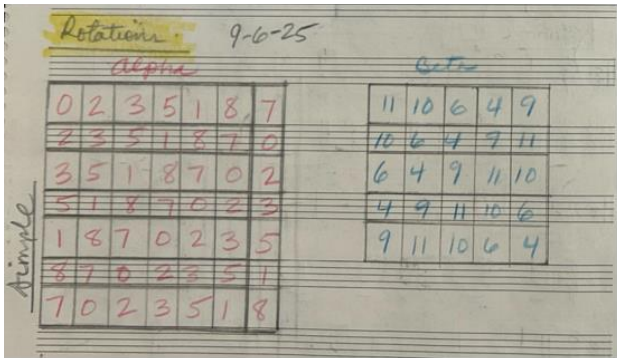


Figure 9. Manuscript Dodecaphonic Simple Rotation Chart Employed in Gibson: *Charade (1963)-Alternate Edit Film Score for Chamber Orchestra [2026]*.

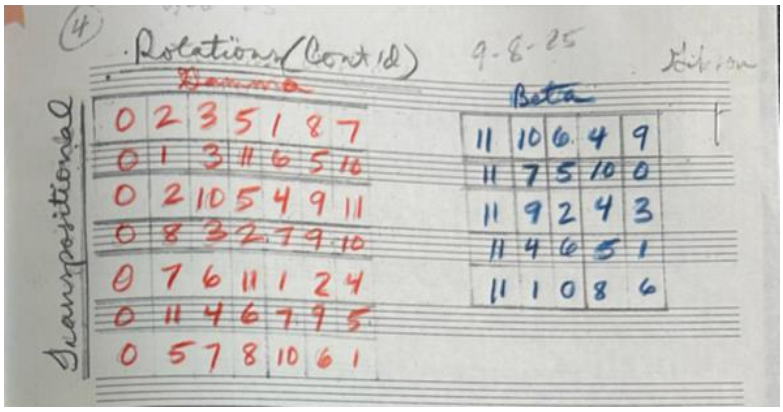


Figure 10. Manuscript Dodecaphonic Transpositional Rotation Chart Employed in Gibson: *Charade (1963)-Alternate Edit Film Score for Chamber Orchestra [2026]*.

Fig. 11A:

Analysis 1

Derivation of Set Class 4-12

Analysis of Set Class Employed in of Final Sonority in Gibson: *Charade (1963): Alternate Edit Film Score for Chamber Orchestra [2026]*, I. b) Opening Titles.

{9,10,0,6}

Analysis of Prime Form

Rotations	Span Interval	Pitch-Classes 1-5 Interval
A: {9,10,0,6}	9	N/A
B: {10,0,6,9}	11	N/A
C: {0,6,9,10}	10	N/A
D: {6,9,10,0}	6	N/A

Calculation of the Normal Form, Transposed to T6

D is Normal Form of Set Class, based on its Span Interval.

D (Prime) at T6 = {0,3,4,6}

{0,3,4,6} is not listed as its own Set Class (Forte, 1973).

Analysis of Inversion Form

Calculated for Inversion Form, at T6

D (Prime) at T6 {0,3,4,6} = T6I {0,9,8,6}

T6I Collapsed for Calculation of Normal Form via Rotations = {6,8,9,0}

Rotations	Span Interval	Pitch-Classes 1-5 Interval
A: {6,8,9,0}	6	N/A
B: {8,9,0,6}	10	N/A
C: {9,0,6,8}	11	N/A
D: {0,6,8,9}	9	N/A

Calculation of the Normal Form, Transposed to T6

A (T6I) at T6 = {0,2,3,6}, which is Set Class 4-12 (Forte, 1973)

A is Normal Form of Set Class, based on its Span Interval.

Figure 11A - Gibson: *Charade (1963)-Alternate Edit Film Score for Chamber Orchestra [2026]*: Analysis of Forte Pitch-Class Set for Final Sonority in I. b) Opening Titles.

Fig. 11B:

Analysis 2

Derivation of Set Class

Analysis of Set Class Employed in of Final Sonority in Gibson: *Charade (1963): Alternate Edit Film Score for Chamber Orchestra [2026]*, II Regina's Apartment.

{3,6,9,10}

Analysis of Prime Form

Rotations	Span Interval	Pitch-Classes 1-5 Interval
A: {3,6,9,10}	7	N/A
B: {6,9,10,3}	9	N/A
C: {9,10,3,6}	9	N/A
D: {10,3,6,9}	11	N/A

Calculation of the Normal Form, Transposed to T6

A is Normal Form of Set Class, based on its Span Interval.

A (Prime) at T9 = {0,3,6,7}

{0,3,6,7} is not listed as its own Set Class in (Forte, 1973).

Analysis of Inversion Form

Calculated for Inversion Form, at T6

A: T9 {0,3,6,7} = T9I {0,9,6,5}

T9I Collapsed for Calculation of Normal Form via Rotations = {5,6,9,0}

Rotations	Span Interval	Pitch-Classes 1-5 Interval
A: {5,6,9,0}	7	N/A
B: {6,9,0,5}	11	N/A
C: {9,0,5,6}	9	N/A
D: {0,5,6,9}	9	N/A

Calculation of the Normal Form, Transposed to T6

A (T9I) at T7 = {0,1,4,7}, which is Set Class 4-18 (Forte, 1973)

A is Normal Form of Set Class, based on its Span Interval.

Figure 11B – Gibson: *Charade (1963)-Alternate Edit Film Score for Chamber Orchestra [2026]*: Analysis of Forte Pitch-Class Set for Opening Sonority in II. Regina's Apartment.

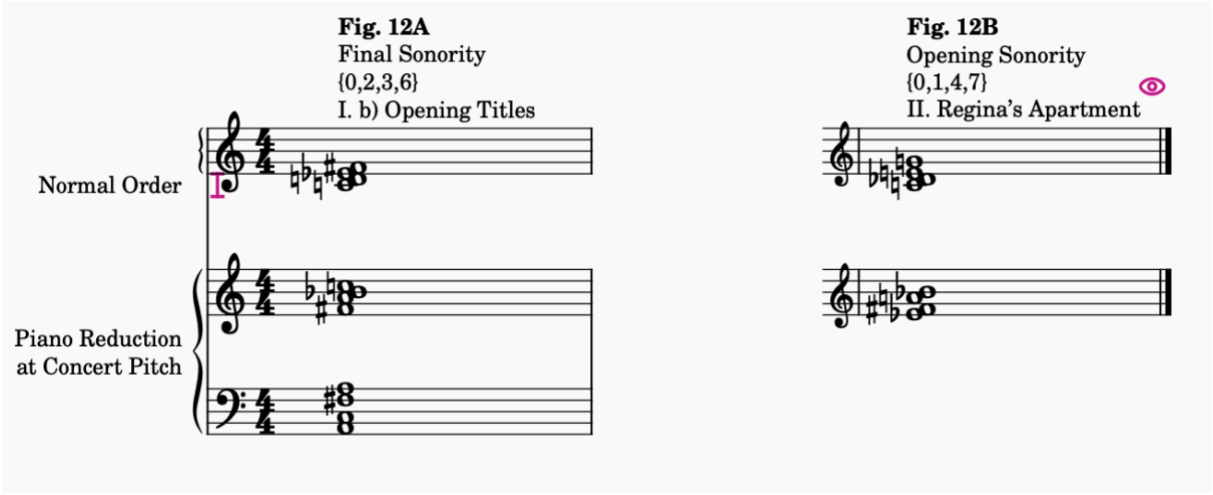


Figure 12A and 12B. Gibson: *Charade (1963)-Alternate Edit Film Score for Chamber Orchestra [2026]*. Figure 12A: Standard Notation of Final Sonority in I. b) Opening Titles. Figure 12B: Standard Notation of Opening Sonority in II. Regina's Apartment.

The methodology of tonal-serial hybridity, which I have developed based on the ideas of many who have come before me, allowed me to paint with a broad palette, musically speaking, and create the moods and the motivic material that would enable a telling of this story in much foreshortened form.

By tightly controlling the editing of the film and the transitions between scenes, by cataloguing its action and its potential for musical expression in the exposure sheet, and by using a consistent set of musical motivic materials and tonal and serial developmental techniques, I was able to create a novel alternate version of a classic Hollywood film score that find its inspiration in the past and demonstrates the ongoing potential of the abovementioned tools as a means for further artistic elaboration.

4.Conclusion

AI Stem-Separation is still a new and developing field, of course, but it is valid to suggest that it has already developed, at this early stage of its growth, into a field that shows the potential of becoming part of the composer's craft. It is my hope that I have described and demonstrated here how a composer may use these Music Source Separation (MSS) tools, for that is certainly what they are, to create novel works of art. It is also my hope that I have described and demonstrated some of the many techniques in Audio Processing that allow the composer to finesse their way to a finished work that is both original and pushes the state of the compositional art forward.

These techniques are, I contest, the beginning of a set of skills that composers will pass down to their students, and that eager emerging composers will embrace and investigate, and, in turn teach to their students and colleagues as time goes by and stem-separation improves in quality.

It is, however, up to composers, sound engineers, filmmakers, and the like to tell the scientists and entrepreneurs in the field of AI Stem-Separation what is needed. If those professionals are guided by musicians, then the tools of tomorrow will contain the elements and features that composers need to further their craft. It is my hope that the reflections in this paper will help engineers, scientists, and musicians chart a path towards more accurate and more diverse AI Stem-Separation (or Music Source Separation) models. I look forward to the results of their work.

The older techniques discussed in this artistic reflection, film editing and the creation of exposure sheets, are skills in the composer's toolbox today, and have been since the time of Erich Wolfgang Korngold and Max Steiner. Their seemingly endless potential and power for creating and transforming narratives, and, hence, compositional programs, is astounding and encouraging. The handcrafted manner of stitching together a story, one group of frames at a time, and finding its internal rhythm through the deep analysis that an exposure sheet can bring, is time-consuming, as all good things are, but also well worth the effort when sitting down to compose music for a film that one now knows inside and out.

The process of Music composition is often frustratingly different each time one attempts the act of composing. Performance conditions, ensembles employed, given themes, styles, genres, and many other circumstances do not often repeat themselves from work to work, and it can feel at times that one is learning to compose all over again, each time one undertakes a project. Nevertheless, over time and with experience, a composer develops facility with certain tools and techniques, and though a project may not greatly resemble those one previously has undertaken, the lessons of previous projects can make themselves usefully present in these new circumstances.

So, it was for me with *Charade*. The original idea was simple enough, and I somewhat underestimated the amount of new learning and the amount of work, especially in the areas of spotting, editing, and cataloguing of the film (on the exposure sheet) that lay ahead of me, but my experience with AI Stem-Separation in previous projects, my work editing many of the videos my chamber orchestra had filmed in the past, especially during the pandemic, and my work with exposure sheets, dating back to my first studies in film music composition, all came to the fore in this project, helping me to create new methodologies for my work as a composer. That *Charade* stretched my skills as a composer and technician is most certainly true, but my gratitude for all that I have learned in the process far outweighs any momentary frustrations.

I am truly proud of what the Martians and I were able to accomplish, and I look forward to composing more pieces in this hybrid genre of film/concert music. I see potential for a performance art element being added to this type of work, and see the potential for reinterpretations of many classic films. I believe that these reinterpretations can help audiences to discover, or re-discover as the case may be, classic films that they will want to experience in their original form, as well as in novel forms. These new interpretations will also keep these beautiful classic works of art alive and relevant to the generations that follow, and so, serve a noble purpose. The new methodologies described above, then, have something to offer humanity, if we are guided by humanistic values and put our audience first.

5.References

Beats To Rap On. (2025). *The Evolution of Music Source Separation - Open Research to Real-World Audio*. Retrieved September 19, 2026, from https://beatstorapon.com/blog/the-evolution-of-music-source-separation-open-research-to-real-world-audio/

Donen, S. (Director). (1963). *Charade* [Film]. Universal.

Emergent Mind. (2025). *Audio Cross-Attention*. Retrieved September 20, 2026 from https://www.emergentmind.com/topics/audio-cross-attention

Forte, A. (1973). *The Structure of Atonal Music*. Yale University Press.

Gibson, P. L. (2026). *Charade (1963): Alternate Edit Film Score for Chamber Orchestra* [Video Performance and Recording]. Retrieved at https://www.youtube.com/watch?v=Xk3-Ijsw_NY&list=RDXk3-Ijsw_NY&start_radio=1

Gibson, P. L. (2020). Tonal-Serial Hybridity in the Works of Three Composers of the Walt Disney Studios with an Analysis of Patrick Gibson's Nexus-Music for a Shadow Animation for Chamber Orchestra. *UC Riverside*. ProQuest ID: Gibson_ucr_0032D_14103. Merritt ID: ark:/13030/m5fc09kj. Retrieved from https://escholarship.org/uc/item/1g17b2jz

Morris, K. (1967). *Mathematics for the Nonmathematician*. Dover.

Rouard, S., Massa, F., & Défossez, A. (2022). *Hybrid Transformers for Music Source Separation*. Meta AI. Retrieved September 19, 2026 from https://arxiv.org/abs/2211.08553

Shirsath, V., Kharah, D., Parekh, D., & Suthar, K. (2021). Audio Stems Separation Using Deep Learning. *International Journal of Engineering Research & Technology*, *10*(3), 101-103. https://www.ijert.org/audio-stems-separation-using-deep-learning

SoundGen. (2026). AI Music Detection: What Deezer, Spotify, and the Research Have Actually Published. Retrieved September 14, 2026 from https://soundgen.ai/blog/spotify-ai-detection-august-2026

SoundGen. (2026). AI Stem Separation in 2026: What the Benchmarks and the DAWs Actually Show. Retrieved September 14, 2026 from https://soundgen.ai/blog/ai-stems-beat-engineers-august-2026

Straus, J. N. (2004). *Stravinsky's Late Music*. Cambridge University Press.

Straus, J. N. (2005). *Introduction to Post-Tonal Theory* (Third Edition). Pearson-Prentice Hall.

Thomas, F., & Johnston, O. (1981). *The Illusion of Life: Disney Animation*. Disney Editions.

Vardhan, S., Acharya, P. R., Rao, S. S., Jasthi, O. R., & Natarajan, S. (2024). An ensemble approach to music separation: A comparative analysis of conventional and hierarchical stem separation. Retrieved September 14, 2026, from https://arxiv.org/pdf/2410.20773