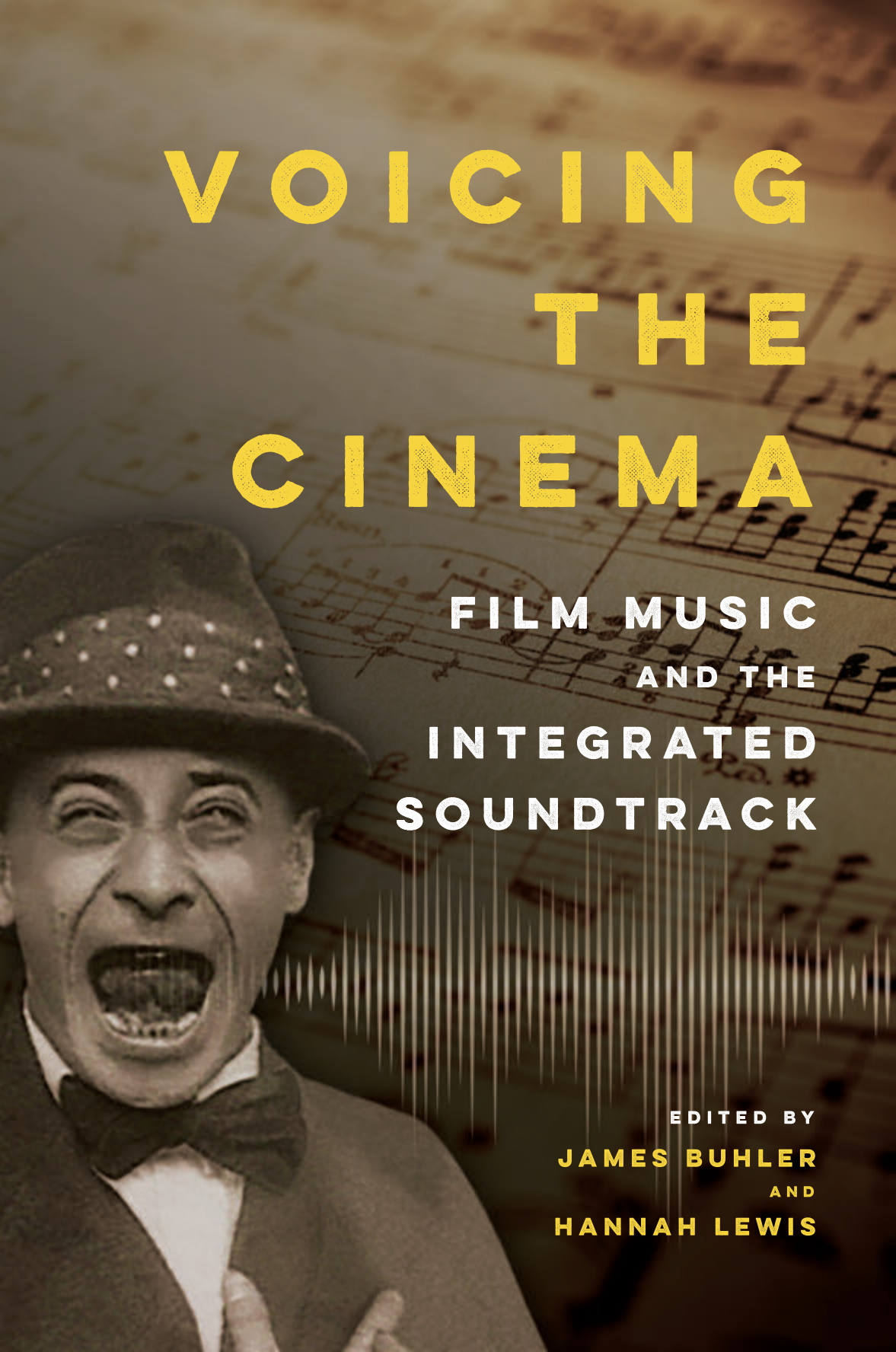
# VOICING THE CINEMA

## FILM MUSIC AND THE INTEGRATED SOUNDTRACK



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## Chapter 12

# Monocentrism, or Soundtracks in Space

## *Rediscovering* Forbidden Planet*'s Multi-Speaker Release*

**Eric Dienstfrey**

In the Fall of 1955, Metro-Goldwyn-Mayer (MGM) chief Dory Schary accomplished what no studio chief had ever accomplished before: he signed New York musicians Bebe and Louis Barron to compose a fully electronic score for the studio's forthcoming science-fiction thriller, *Forbidden Planet* (1956).[1] At the time, the married composers were known for their *musique concrète* as well as their collaborations with John Cage, Anaïs Nin, and other artists with a penchant for acoustical experimentation. The Barrons' music for *Forbidden Planet* ultimately became an extension of their established avant-garde techniques. In lieu of traditional orchestrations, the score boasted synthetic buzzes, sirens, and thwamps. To no surprise, the soundtrack received considerable attention by critics.[2] These "electronic tonalities," as they were called in the opening titles, even prompted the Academy of Motion Picture Arts and Sciences to nominate *Forbidden Planet* for Best Special Effects. There was just one problem: Bebe and Louis Barron were not mentioned in the list of nominees. Instead, the awards announcement listed only MGM sound director Wesley Miller as the creator of the movie's iconic soundscapes.[3]

*Forbidden Planet* was not the first motion picture to see its sound effects—or "audibles"—recognized by the industry in the Special Effects category. *Portrait of Jennie* (1948), for instance, was nominated for the same award for its use of surround sound during the picture's climactic storm sequence. Though unlike *Forbidden Planet*, the designer of *Jennie*'s signature wind noises, James G. Stewart, was listed among the film's special effects team.[4] The Academy's decision to

overlook the Barrons for similar acoustical labor was thus not taken lightly. The two composers immediately asked the courts to issue an injunction to stop the industry from announcing the award at its upcoming ceremony.[5] They also sued Schary and MGM for breach of contract, specifically for letting the Academy exclude their names from the list of key sound personnel.[6] According to the lawsuit, the Barrons designed the film's musical accompaniment as well as its innovative sound effects, whereas Miller merely dubbed these effects into the final mix. Such arguments nevertheless fell on deaf ears. The lawsuit was quickly dismissed, and the Academy's ceremony went ahead as scheduled.[7]

This short-lived legal battle was presumably understood to be no more than a simple disagreement over the dramatic value of the Barrons' electronic tonalities. After all, their narrative functions were, and still remain, ambiguous throughout the movie. At first glance, the sounds seem diegetic, not unlike the audibles nominated in years past. They add physical presence and believability to many of the low-budget set pieces, and they resemble the space-age noises later associated with science-fiction titles like *Star Wars* (1977) and *Tron* (1982). Yet as Rebecca Leydon and James Wierzbicki detail, the iconic blurps and thwamps also adhere to the conventions of nondiegetic accompaniment, wherein each character receives a unique leitmotif that repeats and develops over the course of the film.[8] As Bebe and Louis Barron acknowledged: "In *Forbidden Planet*—as in all of our work—we created individual cybernetic circuits for particular themes and leit motifs."[9] With this in mind, the Academy perhaps saw the Barrons' strange sounds merely as extensions of MGM's other musical experiments, such as the twelve-tone serialism featured in *East of Eden* (1954) and *The Cobweb* (1955).[10] By classifying the electronic noises as music, there was then no reason to also recognize the two composers in the category of Special Effects.

But was the legal dustup simply a disagreement over the ontology of the tonalities? In the pages that follow, I address this question by considering an overlooked piece of *Forbidden Planet*'s history: its stereophonic sound design. In so doing, I argue that MGM's engineers knowingly treated the Barrons' score as diegetic effects when mixing the film for multi-speaker playback. To explain this conclusion, I introduce an aesthetic concept that I call "monocentrism." The concept builds upon Michel Chion's theory of vococentrism, particularly David Neumeyer's expansion of this theory, which states that classically structured films prioritize the voice above music and effects, and that mixers often lower the volume of nonvocal elements in order to maintain the audibility and clarity of spoken dialogue.[11] My concept of monocentrism extends Neumeyer's observations to stereo and surround sound. Rather than altering the volume of individual sounds, I contend that mixers routinely move dialogue, music, and effects to separate loudspeaker locations in order to preserve the primacy of the voice. In most instances, dialogue

plays exclusively through a sound system's center speaker, much as it would in mono theaters. I detail such acoustical designs through a brief analysis of *The Martian* (2015), one of many contemporary blockbusters influenced by *Forbidden Planet*'s soundscapes.

Following this analysis, I chronicle monocentric practices during the 1950s, with particular attention given to the stereo technology used during *Forbidden Planet*'s theatrical release. I then reconstruct *Forbidden Planet*'s multi-speaker design in relation to these stereophonic practices. Through this analysis, I explain how the film's treatment of the musical score broke from conventional mixing techniques. The electronic tonalities specifically panned from speaker to speaker in concert with onscreen action. These acoustical effects invited audiences to interpret the musical score not as nondiegetic accompaniment but as diegetic noises. In other words, Bebe Barron, Louis Barron, and MGM were likely in agreement as to the dramatic function of the film's electronic tonalities; they were special diegetic effects. I thus end my analysis by offering an alternative explanation for why the two composers were presumably snubbed by the Academy.

## Monocentrism: Vococentrism in Stereo

As Neumeyer argues, Hollywood films are vococentric.[12] Their soundtracks are constructed into unified systems wherein dialogue, music, and effects collectively provide narrative clarity and aesthetic coherence to each motion picture. And as the term indicates, these soundtrack systems manifest an internal hierarchy that prioritizes the voice over all other sonic elements. To achieve this hierarchy, rerecording engineers generally move music and effects out of the way when mixing scenes with dialogue, particularly when the dialogue conveys important story information. For example, a party might begin with source music blasting from the soundtrack, but once characters begin talking, the music lowers in volume in order to bolster the dialogue's intelligibility. If the music failed to move out of the way, and instead lingered in the soundtrack at a relatively loud volume, the soundtrack might call attention to itself and invite filmgoers to find meaning in this acoustical decision. (It could be presumed that the music was meant to be noticed because it enhances the film's broader themes or expresses a character's subjectivity.) In this regard, vococentrism is more than a storytelling aesthetic that prioritizes clarity and speech; it is also a system of norms and variations that filmmakers abide by in order to arouse an audience's interpretative instincts.

For much of the studio era, vococentrism was a defining feature of Hollywood filmmaking, and it remains a dominant trait of contemporary cinema as well, even for an acoustically adventurous surround sound release like *The Martian* (2015). During the film's climactic sequence, for instance, American astronaut

Mark Watney (Matt Damon) launches himself into Mars's stratosphere in hopes of reuniting with his former crew members who concurrently orbit the desolate planet. The sequence contains a number of conversations between Watney and Commander Melissa Lewis (Jessica Chastain) as they attempt to connect at breakneck speeds, and between Lewis and her crew as they improvise ways to decelerate their spaceship. And to accentuate the obstacles that these astronauts face, the volume of the music and effects often overpowers their dialogue. When Lewis tethers herself to the spaceship and propels toward Watney, the underscore at times plays approximately twelve decibels louder than the voice of Beth Johanssen (Kata Mara), who updates Lewis about her distance from Watney. Similarly, the film adds loud "whooshes" as the astronauts fly toward each other, details that are humorous given an absence of wind (or sound) in outer space. Such creative decisions embody what historian Jeff Smith terms the "sound of intensified continuity," an aesthetic that favors wider dynamic ranges and densely layered effects—even nondiegetic effects—in order to highlight the affective, sensory, and phenomenological dimensions of a film.[13] In *The Martian*, this aesthetic accentuates acoustical flourishes that call attention to the astronaut's life-threatening predicament. Consequently, the dialogue at times seems to take a proverbial back seat to the scene's other noises.

The scene's vocal performances, however, never lose their perceptual salience within the soundtrack. In keeping with vococentric principles, the rerecording engineers—led by Paul Massey—utilized an alternative means of privileging dialogue in theaters, one that allowed the musical gestures and effects to play at loud volumes without completely masking spoken information.[14] Massey and his sound team mixed voices to play from one loudspeaker, and they directed competing sounds to play from other loudspeakers. Lewis's communications with her crew, for instance, play through the loudspeaker at the center of the screen, as does Watley's wry commentary. However, there are a few exceptions. When Watley learns the spaceship will miss his intercept by 312 meters, Watley retorts, "Great, I'll wave at you guys as I go by." He delivers this line while rotating across the screen, and to punctuate his precarity, his voice pans horizontally from the left speakers to the right speakers. Similarly, when the rescue mission succeeds and Johanssen tells NASA "We got him," her voice plays through the center loudspeaker and echoes in the sides. Though the film's stereo design prioritizes important acoustical information by directing nearly all dialogue to the middle of the screen, it deviates from this norm for dramatic emphasis, as is common in vococentric soundtracks.

In contrast, the scene's music and effects play almost exclusively from offscreen locations. The roar of the rocket that propels Watley into space, as well as the controlled detonation of the crew's makeshift bomb, blast from the side speakers

and reverberate through the rears, a design that situates the explosions within the space of the movie theater. Likewise, the bursts of air that propel Lewis and Watley toward each other pan from speaker to speaker in concert with the on-screen action. Conversely, the music does not move around the theater. Rather, it radiates loudly through the sides and quietly through the center. This design allows the score to remain forceful throughout the sequence, and to even rise to peak levels during suspenseful moments without masking the dialogue. In sum, the spatial separation of sound allows engineers to sequester music and effects to the film's background—at times behind the audience—so characters can deliver their lines unobstructed at the front of the theater.

I call this spatial organization of sound monocentrism, both a reference to vococentrism and to Hollywood's earlier acoustical practices. During the transition to sound, talking pictures were monaural. They were distributed to theaters on a single channel of audio—either a record's groove or a narrow optical track. The sounds in this channel would then play from a single loudspeaker or from a group of speakers arranged around the center of the screen. When studios began releasing films with multiple audio channels, such as the two-track premieres for *Hell's Angels* (1930), they continued to adhere to monaural aesthetics.[15] Dialogue played from the center of the screen while the side speakers were reserved for gunfire, jet engines, and other background noises. Because these screenings required multiple tracks of sound, they were not technically monaural. Rather, they were monocentric. They stored dialogue and other important narrative information in the center channel, while the sides played details that smaller venues could jettison if they lacked space for extra speakers.

Despite the many innovations to stereophonic technology following the transition to talking pictures, multitrack films have remained primarily monocentric, as heard throughout six-track roadshows of the 1960s, Dolby Stereo releases of the 1970s and 1980s, and—as *The Martian* illustrates—the digital surround sound titles that shake today's multiplexes.[16] There are several reasons for this longevity. First, centric practices are common, if not inherent, to all forms of art. As theorist Rudolph Arnheim contends in his essay, *The Power of the Center* (1982), the concentricity of circles and the eccentricity of grid lines are integral to the way humans express themselves aesthetically and, in turn, have become structural components of artistic representation.[17] Cinematic representation is no exception. Although Arnheim famously dismissed talking pictures for their apparent "violation" of basic aesthetic laws, film's audiovisual appeal nevertheless derives from its adherence to long-held principles of clarity, simplicity, and balance, as well as the norms of centrism that Arnheim details throughout history.[18] Monocentric soundtrack designs merely extend these aesthetic norms into the realm of stereophonic storytelling.

Similarly, monocentrism strengthens cinematic absorption. Films are roughly two hours in length, and sound technicians generally want audiences to focus on the story the entire time. By keeping dialogue in the center channel, filmgoers are likewise encouraged to keep their eyes on the screen. If engineers routinely send dialogue to the rear channels, audiences might turn their heads away from the image to locate the person talking—an occurrence that many mixers fear would undermine a film's dramatic impact.[19] In this context, monocentric sound designs became a practical means to control the attention of moviegoers, and as such they continue to be produced by Hollywood.

Monocentrism's greatest value to filmmakers, however, resides in the way it standardizes motion picture playback. Like many other Hollywood releases, *The Martian* is designed to play through a wide variety of sound systems, from 64-channel Dolby Atmos for the industry's largest screens, to traditional configurations for the home. Though these loudspeaker variations could interfere with the way audiences experience stories like *The Martian*, the film's spatial acoustics nevertheless remain constant from theater to theater because each stereo system can be partitioned into (a) the center channel, and (b) its surrounding channels. In large and small theaters alike, dialogue plays front and center while music and effects become an acoustical frame that encircles the voice and bolsters its prominence. The most important element of the soundtrack, the voice, therefore never loses its perceptual salience, even in cinemas that surround audiences with subwoofers and other sensory attractions. In effect, monocentrism preserves the principles of vococentrism in any theater regardless of its loudspeaker arrangement.

## Monocentrism in the 1950s

Although most films adhere to monocentric principles, and have done so since the introduction of sound, technicians routinely disagree as to what constitutes a proper monocentric soundtrack. For instance, during action sequences with offscreen gunfire and explosions, some mixers send key effects to only the side speakers, while others routinely pan these sounds to the rear speakers.[20] Some technicians even mix music into specially installed ceiling channels, as demonstrated by the premiere showings for *Ben Hur* (1959) and *Man of Steel* (2013).[21] Such aesthetic debates also pertain to the reproduction of dialogue. Whereas a film like *The Martian* reproduces voices generally through the center channel, other monocentric films throughout history have been far more adventurous when it comes to panning dialogue across the front loudspeakers.

These stereo effects were especially common in the 1950s. As scholars note, it was during this decade that 20th Century Fox introduced the popular CinemaScope format, a technology that promised filmgoers new kinds of audiovisual

sensations.[22] Each 35mm CinemaScope print stored an image that was nearly twice as wide as the standard 1.37-to-1 picture ratio. And this expansive canvas was further enhanced by an equally immersive stereo system. In place of a single optical track, CinemaScope prints housed four separate tracks of magnetically encoded audio, each corresponding to a different playback channel. The left, center, and right tracks contained information for the three loudspeakers behind the screen, and the fourth track contained effects that played through the banks of speakers located on the rear and side walls of the auditorium.[23]

To highlight the technology's sensory possibilities, Fox initially recorded its CinemaScope productions onto three separate microphone tracks. Actors located on the left side of the sound stage would speak into the left microphone at the loudest volume, whereas actors at the other end of the stage would speak into the right microphone.[24] These stereo effects were extraordinarily noticeable when they played in theaters. For instance, during theatrical screenings of *River of No Return* (1954), when Matt Calder (Robert Mitchum) and Kay Weston (Marilyn Monroe) converse from opposite sides of the frame—a common staging throughout the feature—their voices bounced between the left and right sides of the auditorium, as their voices were recorded on the set by the left and right microphones.[25] These multi-mike techniques became an inventive way for engineers to accentuate onscreen dialogue without straying too far from vococentric principles.

Such techniques, however, were quite demanding of filmmakers. The use of additional microphone tracks increased equipment and labor costs, and—as Fox engineer Lorin Grignon documented in detail—it created a host of obstacles when staging scenes for multiple camera angles and, later, when editing together the different sound perspectives in postproduction.[26] As a result, many studios continued recording production sound onto only one audio track. Their stereo effects were then generated with special rerecording equipment, such as Westrex's line of RA-1500 mixing consoles.[27] This equipment enabled rerecording technicians to keep production recordings in the center speaker for most scenes, and it allowed them to open up the dialogue to the side channel during voice-offs and climactic moments. The flexibility therefore made it easy for engineers to adhere to monocentric norms when mixing their single-track recordings into four-track stereo release prints.

It was during this time that many studios also began experimenting with Perspecta, a playback format that could reproduce stereo effects without special release prints.[28] Like the industry's monaural films, Perspecta soundtracks were encoded as single optical soundtracks and distributed onto standard 35mm filmstrips. The core difference between a standard release and a Perspecta release was that a Perspecta soundtrack contained three low-frequency control tones at

30Hz, 35Hz, and 40Hz—tones that fell below the standard playback range for optical sound systems. The sub-audible tones would increase and decrease in volume, and these shifts in intensity directed the soundtrack to the left, center, or right loudspeakers during select sequences.[29] Thus, if a rerecording engineer wanted a gunshot to emanate from the left side of the auditorium, he would raise the volume of only the 30Hz tone when mixing that sound for the release print. Theaters with special Perspecta integrators would then decode this tone and play the gunshot through the left loudspeaker. Thus, the technology produced stereo effects without requiring studios or theaters to fully invest in expensive multitrack equipment.

Perspecta was the invention of C. Robert Fine, a seasoned audio engineer known for high-quality music reproductions. While at Reeves Sound Studios in New York, Fine famously cut the disks for several prominent symphonic recordings, including Virgil Thomson's score to *Louisiana Story* (1948).[30] And with his wife, Wilma Cozart, Fine similarly oversaw the acoustical design of the popular "Living Presence" series for Mercury Records.[31] Fine's reputation in the music industry added prestige to his new theatrical format. Consequently, many in Hollywood jumped at the chance to apply Fine's invention to dozens of motion pictures. By the mid-1950s, MGM, Paramount, Warners, and Columbia were all releasing pictures in Perspecta stereo, including *Seven Brides for Seven Brothers* (1954), *A Star is Born* (1954), *White Christmas* (1954), *Bad Day at Black Rock* (1955), *The Man Who Knew Too Much* (1956), *Forbidden Planet*, and even the 1954 rerelease of *Gone with the Wind* (1939).[32]

Exhibitors showed admiration for Fine's invention as well. Whereas installing Fox's four-track system cost roughly $15,000 per screen, Perspecta's installation rates were reportedly as low as $850.[33] The price encouraged a number of smaller theaters to install the system. In October 1954, *Motion Picture Daily* reported that nearly 700 screens were wired with Perspecta integrators, and by the end of 1955 this number quadrupled to nearly 2,800 screens worldwide.[34] Hundreds of thousands of filmgoers therefore were listening to Perspecta sound designs throughout the 1950s, perhaps even unknowingly. Indeed, when Fred Astaire sings about "Stereophonic Sound" in the middle of *Silk Stockings* (1957), some audiences would have heard the number's acoustical effects resound not through traditional stereo technology—to which the lyrics referred—but through Fine's single-track format. And it is doubtful that many filmgoers noticed.

Perspecta's invisibility was no accident. Fine wanted his format's acoustical effects to sound indistinguishable from those of four-track stereo. For instance, throughout the Perspecta mix of *The Barefoot Contessa* (1954)—a mix encoded at Fine's New York studio—the onscreen dialogue between Harry Dawes (Humphrey Bogart) and Maria Vargas (Ava Gardner) often vacillates between the left

and right loudspeakers, similar to the movement of Mitchum's and Monroe's voices during four-track screenings of *River of No Return*.[35] As historians note, such stereo effects were hallmarks of Perspecta soundtracks in general.[36] But they rarely occurred when onscreen conversations were accompanied by nondiegetic score. During those scenes, if the dialogue panned between the side speakers, so too would the musical accompaniment. Since nondiegetic scores were expected to remain stationary during a movie, these stereo effects would have surely confused audiences. Many dialogue sequences were thus cautiously mixed. Their sounds emanated from the center loudspeaker, while the side channels played the same audio roughly eight to ten decibels lower.[37] Perspecta films, in turn, illustrated a unique variation of monocentrism, one in which the soundtrack mostly played through the center channel, while the localization effects that defined stereo releases were largely reserved for dramatic sequences.

## *Forbidden Planet* in Perspecta

The 1956 theatrical release of *Forbidden Planet* was thus historically significant. Rather than adhere to industry norms, its Perspecta mix deviated from monocentric principles, particularly in regard to the spatial design of its electronic score. Whereas *Barefoot Contessa*, *River of No Return*, and even *The Martian* relegate their musical accompaniment to the soundtrack's background, *Forbidden Planet* routinely pans the Barrons' score between the theater's loudspeakers. In effect, the film's construction treats the music as if it were diegetic information.

Such departures from Hollywood's soundtrack conventions were undoubtedly motivated by the film's eccentric story. It follows a team of astronauts, led by Commander J. J. Adams (Leslie Nielsen), as they attempt to rescue scientists stranded on the distant planet of Altair-4. After landing on the planet, however, the astronauts endure a series of attacks from a species of invisible monsters. Adams soon learns that these monsters are controlled by the thoughts of the chief scientist, Doctor Morbius (Walter Pidgeon). Morbius had uncovered an ancient technology that inadvertently causes his subconscious desires to manifest themselves as violent creatures. And due to his displeasure at seeing the astronauts court his daughter Alta (Anne Francis), these "monsters of the id" attack the crew and sabotage their mission.

The film was loosely inspired by Shakespeare's *The Tempest*, with the play's Mediterranean locale transformed into Altair-4, and with the titular storms reimagined as invisible villains.[38] The narration thus centers around the monsters' attacks, and the sound design for each of these sequences adds to the mysterious nature of the antagonists. For instance, roughly one hour into the film, audiences witness an invisible creature sneak into the docked spaceship. First, its footprints

appear to walk along the planet's soil, then the steps of the ship's large metal staircase bend one-by-one as the monster boards the cabin. The scene consists of a single shot, and to complement this simplicity the Barrons' sonic accompaniment remains eerily sparse. The upper registers contain pulsations of a single electrical tone, while the lower registers play thwamps in synchrony with the footsteps. As Rebecca Leydon details, the Barrons achieved such sounds by eschewing traditional instrumentation in favor of homemade equipment, including vacuum-tube oscillators and extensive feedback paths. Noises from these oscillators were then recorded onto magnetic tapes and manipulated by speed changes, splices, and other studio techniques.[39] The resultant pulses and thwamps—sounds that one critic called "skin-prickling"—presumably stood out to typical filmgoers.[40]

To further enhance the salience of the music, MGM's rerecording mixers peppered the score with stereo effects that steered the noises around many of the industry's theaters, specifically those wired for Perspecta technology. Today, however, such experimental effects are nearly impossible to hear. Exhibitors have long since discarded the integrator equipment that once enabled *Forbidden Planet* to play with a Perspecta stereo design. Additionally, most home video releases of the film are remastered for digital formats like 5.1 and 2.0, neither of which provides a faithful representation of 1950s stereo aesthetics. One can only study *Forbidden Planet*'s original multi-speaker mix by recovering the three low-frequency control tones embedded in unrestored versions of its soundtrack. Interestingly, these tones remain intact in the film's French language dub available on the 2010 Blu ray release, as this dub appears to be a digitization of the optical track that played in European theaters during the 1950s.[41]

To excavate the Perspecta mix from these control tones, I uploaded the French soundtrack into Sonic Visualizer, software that provides detailed spectrograms for every bit of data on any given audio track, including low-frequency metadata.[42] The software allowed me to generate a clear picture of how MGM's engineers used the Perspecta system when mixing *Forbidden Planet*. During the famous footsteps scene specifically, the high-frequency pulses and low-frequency thwamps play from the center speaker, they move to the right speaker as the monster's footsteps move right, and they return to the center speaker when the camera repositions the footsteps back in the center of the frame. Thus, during the film's original theatrical run, the sounds would have panned from speaker to speaker in correspondence with the movement of the monster.

Such stereophonic designs are not entirely foreign to motion picture soundtracks. During the Dolby Atmos release of *Gravity* (2013), for instance, Steven Price's score regularly pans throughout the back, side, and ceiling channels—an effect that, as Miguel Mera argues, frees the music from its traditional sound stage spatialization.[43] That being said, these kinds of stereo experiments have never been common in Hollywood. Indeed, the unique acoustical effects heard during *Forbidden Planet*'s

Perspecta mix would have been a noticeable departure from the norms of musical accompaniment at the time of the film's release.

One might conclude that such localization effects were simply a mistake, a consequence of MGM's attempts to turn a single-track release into a multichannel soundscape. Film critic Rick Mitchell argued as much after hearing *Forbidden Planet* play in its original Perspecta stereo design:

> On the whole the presentation resembled the results of putting a mono track through a good stereo synthesizer, however in dialog scenes where attempts were made to position the dialog on the screen with the actor speaking it, rather incongruously the entire track, including production effects and ambience would also jump from speaker to speaker![44]

Mitchell's comments were in reference to several sequences, such as when Robbie the Robot humorously delivers sixty gallons of bourbon to the cook, or when Adams, Alta, and Morbius all hide from the invisible creatures in the engine room. Both scenes combine dialogue with musical accompaniment, and like Mitchell describes, as the voices of the characters pan between the left and right loudspeakers, so do the Barrons' electronic tonalities. These types of movements were a byproduct of Perspecta's methods of compression. Because the system required dialogue, music, and effects to share the same soundtrack on release prints, whenever engineers would direct dialogue to the left loudspeaker, all other elements on the soundtrack, including the music, were forced to play from this loudspeaker as well.

But not every instance of musical panning contains dialogue. Indeed, as the aforementioned id monster slowly approaches the spaceship, the Barrons' tonalities are the only elements on the soundtrack. The movement of the music was therefore not tied to any concurrent movement of voices. Even more interesting, the score does not simply pan back and forth between the center and right speaker. The stereo design is instead far more intricate. For every low-frequency thwamp, the control tones shift their volumes in a manner that quickly sends these noises back and forth between the center and right loudspeakers, and briefly to the left speaker, too. This complex soundscape suggests that the thwamps are reverberating in space. Perhaps the monsters are so large that their footsteps shake the ground as they walk, and these tonalities are the noises that emanate from each footstep and that continue to radiate throughout the setting. Moreover, this audiovisual effect happens repeatedly throughout the scene, an indication that the panning of the score was not a one-off mistake, but an intentional effect designed to invite audiences to pay greater attention to the music.

Interestingly, this listening activity is built into the soundtrack's larger narrative structure. By the time the monster boards the spaceship, the film has repeatedly asked audiences to consider the diegetic possibilities of the electronic tonalities.

As James Wierzbicki argues, "throughout *Forbidden Planet* the audience member is made to wonder, especially at the onset of a cue, about the source of what is being heard."[45] In the opening scene, for example, Adams orders his crew to prepare for the ship's deceleration from light speed. They then briefly turn into green beams of light that protect the men from injury during these powerful changes in velocity. The score for this sequence consists of beeps and buzzes as well as various electrical tones that rise and fall in pitch. Being that these noises resemble many of the musical effects heard previously during the film's opening titles, audiences might presume that the beeps and buzzes are also nondiegetic accompaniment. Yet the rising and falling of each sound's pitch also aligns with the spaceship's changes in velocity, and this audiovisual correspondence encourages filmgoers to read the electronic tonalities as the noises made by the spaceship. As this sequence demonstrates, the exact source of the electronic score is often ambiguous. In response, audiences were guided to pay greater attention to the soundtrack, as if the sounds could provide explanations for the mysterious phenomena that define the story world.

By the end of the film, however, these acoustical ambiguities all but disappear from the broader stereo design. The electronic tonalities become synchronized to footsteps and other onscreen actions, and they move freely through the theater in concert with these actions. Audiences accustomed to Hollywood's stylistic conventions were unlikely to have interpreted these roving sounds simply as nondiegetic accompaniment, for such localization of music was rare, if not completely unheard of, at the time of the film's release. Rather, those who heard the film play in Perspecta were invited to interpret these buzzes, beeps, blurps, and thwamps as the physical presence of an invisible entity that could not be represented through traditional visual techniques. The history of monocentrism therefore explains why the Barrons' allegations against MGM were misdirected. Contrary to the composers' accusations, the studio's sound department did more than simply set the decibel levels of the musical accompaniment. MGM performed a creative feat that was necessary given the visual limitations of the story. When the score passed through the studio's mixing consoles, Wesley Miller and his team of rerecording engineers changed each cue's ontological value. They turned the Barrons' nondiegetic tonalities into elements of the film's diegesis.

## Conclusion

As this chapter demonstrates, stereo complicates vococentric practices by adding a spatial dimension to the soundtrack. The concept of monocentrism clarifies this spatial transformation by defining the aesthetic principles that govern how dialogue, music, and effects are traditionally mixed for multi-speaker soundscapes.

*Forbidden Planet* serves as an unusual case study for how monocentrism functions, for instead of abiding by the industry's mixing norms, MGM's engineers deviated from these conventions in ways that enhanced the film's narration. When the Barrons' music moved through the space of the theater, it signaled to audiences that the electronic tonalities were no longer mere background accompaniment, but a conduit for diegetic information. In turn, the music became a special stereo effect, much like the Oscar-nominated winds that shrieked to the sides of audiences during *Portrait of Jennie* several years prior.

It therefore remains curious that MGM and the Academy failed to add the names of Bebe and Louis Barron to the list of personnel responsible for creating the film's audible effects. We can speculate that there may have been animosity between Dore Schary and the two composers, or that MGM routinely prevented contract employees from receiving nominations for their creative labor. However, it seems more likely that the Barrons misunderstood the kinds of acoustical sensations that the Academy intended to recognize. Instead of commending the tonalities themselves, the Special Effects category celebrated the ways that MGM's Wesley Miller fit these tonalities into the film's multichannel soundscapes. When the science-fiction thriller was released, such localization effects were a novelty. Filmmakers generally adhered to conceptions of proper fidelity, wherein music was to remain motionless in the space of the theater, much like a concert stage.[46] *Forbidden Planet* was different. The movement of the music challenged these ideals by giving life to story elements that lacked physical, pro-filmic referents. In nominating Miller, the Academy was recognizing his departure from the industry's monocentric ideals. Though Hollywood valued these ideals for their storytelling efficiency, those who successfully strayed from such conventions were praised for their ingenuity as well.

*Forbidden Planet* would not be the last time that principal sound workers were overlooked by the Academy. Wendy Carlos's and Frank Serafine's acoustical contributions to *Tron* were conspicuously neglected when the film's mix was nominated, and when *Stars Wars* won the Oscar for Best Sound the Academy omitted Ben Burtt's name from the list of nominees (the famed sound designer would instead receive a Special Achievement award during the ceremony).[47] Bebe and Louis Barron's exclusion from the Special Effects category was thus not a unique event. Rather, it was a harbinger of the Academy's difficulties when recognizing all unionized and nonunionized personnel who contribute to a movie's soundtrack. Though in many ways, the Barrons did not need the nomination in order to win accolades for their time in Hollywood. The score for *Forbidden Planet* helped the two composers secure a series of high-profile theater and television commissions in the decades that followed.[48] Today, the film is routinely heralded by scholars and sound technicians as one of the more innovative and influential pieces of music ever written for the screen.

In contrast, Wesley Miller's contributions to the science-fiction thriller are trumpeted at a far softer volume. The film's audible effects failed to win the Academy Award; the prize instead went to *The Ten Commandments* (1956).[49] And in recent restorations of *Forbidden Planet*, Miller's spatial effects have been replaced with an entirely new 5.1 stereo design, one that is more typical of monocentric practices. Indeed, despite his Oscar nomination, Miller and his sonic achievements have become merely a footnote in history. The Barrons thus presumably misunderstood the actual value of a nomination. For if the two composers knew that they would one day be championed, while Miller would be all but forgotten, it is doubtful that they would have taken legal action against the very producers who could have hired them to compose more electronic music for the cinema.

## Notes

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3. Edwin Schallert, "Surprises Mark Selections for 29th Academy Awards," *Los Angeles Times*, Feb. 19, 1957: 2.

4. "Nominations Made for Oscar Honors," *Los Angeles Times*, Feb. 11, 1949: 4.

5. Thomas M. Pryor, "2 Ask Injunction to Bar Film Prize," *New York Times*, Mar. 27, 1957: 27.

6. "Suit Seeks to Block Oscar Movie Nominee," *Los Angeles Times*, Mar. 27, 1957: B2.

7. "Writ Denied to Halt Sound Effects Oscar," *Los Angeles Times*, Mar. 28, 1957: 2.

8. Rebecca Leydon, "*Forbidden Planet*: Effects and Affects in the Electro Avant Garde," in *Off the Planet: Music, Sounds and Science Fiction Cinema*, ed. Philip Hayward (Eastleigh, U.K.: John Libbey, 2004), 61–76; James Wierzbicki, *Louis and Bebe Barron's* Forbidden Planet*: A Film Score Guide* (Lanham, Md.: Scarecrow Press, 2005), 99–153.

9. Quoted in Timothy D. Taylor, *Strange Sounds: Music, Technology & Culture* (New York: Routledge, 2001), 94.

10. Sabine M. Feisst, "Arnold Schoenberg and Cinematic Art," *The Musical Quarterly* 83, 2 (Spring 1999): 106.

11. Michel Chion, *The Voice in Cinema*, trans. Claudia Gorbman (New York: Columbia University Press, 1999), 1–6; David Neumeyer, *Meaning and Interpretation of Music in Cinema* (Bloomington: Indiana University Press, 2015), 3–49.

12. Neumeyer, *Meaning and Interpretation of Music in Cinema*, 3–49.

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cloud.com/soundworkscollection/the-sound-of-the-martian-with-re-recording-mixer-paul-massey. Accessed August 3, 2018.

15. Donald Crafton, *The Talkies: American Cinema's Transition to Sound, 1926–1931* (Berkeley: University of California Press, 1999), 349–50.

16. James Corcoran and Douglas Williams, "The Recording and Re-Recording of Stereophonic Sound for Wide-Screen Motion Pictures," *Journal of the SMPTE* 77, 12 (Dec. 1968): 1292–94; Jay Beck, *Designing Sound: Audiovisual Aesthetics in 1970s American Cinema* (New Brunswick, N.J.: Rutgers University Press, 2016), 169.

17. Rudolf Arnheim, *The Power of the Center* (Berkeley: University of California Press, 1982).

18. Rudolf Arnheim, *Film as Art* (Berkeley: University of California Press, 1957), 199–230.

19. Smith, "The Sound of Intensified Continuity," 342.

20. Mark Kerins, *Beyond Dolby (Stereo): Cinema in the Digital Sound Age* (Bloomington: Indiana University Press, 2010).

21. Milo Lory, interview with Irene Atkins, in *American Film Institute/Louis B. Mayer Oral History Collection* (Glen Rock, N.J.: Microfilming Corporation of America, 1975), 105–9; Benjamin Wright, "Atmos Now: Dolby Laboratories, Mixing Ideology and Hollywood Sound Production," *Living Stereo: Histories and Cultures of Multichannel Sound*, ed. Paul Théberge, Kyle Devine, and Tom Everrett (New York: Bloomsbury Academic, 2015), 241–42.

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39. Leydon, "*Forbidden Planet*," 62. See also Ted Greenwald, "The Self-Destructing Modules behind the Revolutionary 1956 Soundtrack of *Forbidden Planet*," *Keyboard Magazine* (Feb. 1986): 54–65.

40. "Eerie New 'Plastic Sound,'" D4.

41. *Forbidden Planet*, directed by Fred Wilcox (1956; Beverly Hills: 20th Century Fox, 2010), Blu ray.

42. The control tones are a few cycles off from their original frequencies. This indicates that the audio track weathered significant transcoding over time. It was likely ported to digital tape as well as converted between European (PAL) and North American (NTSC) video standards. During these conversions, its frame-rate would have shifted, causing the three tones to move to a slightly different frequency range.

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46. For more discussion on this fixed sound stage aesthetic, see Mera, "Towards 3-D Sound," 102–3.

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