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The Aesthetics and Establishment of Analog Post-Production

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The Aesthetics and Establishment of Analog Post-Production

By

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Abstract

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This dissertation examines the emergence and establishment of analog post-production during the transition to sound. I analyze how the analog post-production system cannibalized the nascent post-production process of silent film, whereby the image from the filmmakers was combined with non-standardized sound produced live in the theater. Multiple forces at the theaters asserted influence over a film's presentation. Exhibitors, for example, created a de facto form of post-production by altering films to suit scheduling strategies, local tastes, and aesthetics, and screenings varied widely.

Following the ascendance of analog post-production in the American studio system, a shift began to take place with the introduction of sync sound, as a standardized film could potentially be created from heterogeneous visual and audio elements, recorded at different times and in different spaces. This process favored the invisible — the denial of labor conducted by specialized workers — via the seamless continuity editing of sound and image. Film scholars have long made the point that post-production, specifically continuity editing, conceals labor and technology. Indeed, this is the premise on which film theory of the 1970s is based. Most scholars approached this issue by analyzing the finished product, the film "text." I intervene to study the actual work of, and discourses produced around, post-production itself. I argue that the introduction and codification of analog post-production had a profound impact on filmmaking as well as on exhibition.

With the emergence of synchronous sound in the late 1920s, post-production asserted itself into what I refer to as the analog era with its own distinct mode of creation defined by a potentially endless process that could result in myriad forms of a film. In this scheme, practitioners obtain and manipulate various sound and visual elements and then synchronize, or marry them. Under this system, a new set of practitioners finalizes film form, where the workers of post-production replace those of the theater. These analog post-production workers tend to view a film as a collection of elements controlled and shaped in the post-production process. For filmmakers, a movie's creation becomes tied more to this process and less to the moment of production on the set that has for so long been a focus of film studies.

To my wife.

Mere words do not suffice. Who found time to be wife, mother, and muse.

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Acknowledgments

To Professor Tony Kaes, where this began.

And to Professor Kristen Whissel, where it concluded.

In the immortal words of William Shakespeare, “I thank you. I am not a man of many words but I thank you.” For your wisdom and patience. There are more virtues present but none so needed.

Introduction

With the emergence of synchronous sound in the late 1920s, post-production asserted itself into what I will refer to as the analog era with its own distinct mode of creation defined by a potentially endless process that can result in myriad forms of a film. In this scheme, practitioners obtain and manipulate various sound and visual elements and then synchronize, or marry, them. Under this system, practitioners tend to view a film as a collection of elements controlled and shaped by post-production. For filmmakers, a movie's creation becomes tied more to this process and less to the moment of production on the set that has for so long been the focus of film studies. Furthermore, the efforts of early film engineers proved to a critical part of this transition. Their work standardizing the technique and technology of film production provided the post-production process with an increasing array of elements and tools (such as dubbing) with which to create a film. The arrival of synchronous sound created a new authorial force in filmmaking, one derived less from the set and more from the studio. I argue that the establishment of analog post-production is the largely unheralded revolution during the late 1920s, a transformation too long overlooked as academics focused strictly on the issue of the transition to sync sound as opposed to the systemic shift in post-production entailed by the latter.

In this analog post-production process, various sounds are recorded at different times and then built as a sound track and married to the visuals.[1] The realized film form reflects the new assertion of analog post-production's power as it became codified in the transition to synchronized sound. Scholarly discussion of this transitional period in the late 1920s and early 1930s fails to properly note this larger, more fundamental shift in film creation. This shift is nothing less than the emergence and codification of post-production where sound and visual may be indelibly linked through its own distinct creative process. This process worked toward standardizing a film's form and presentation by the integration of sound and visual elements.

The most significant aspect of the arrival of post-production is its control and aesthetic power over the film form itself. In her 1980 "Voice in Cinema" article, Mary Ann Doane notes that post-production sound work increased control over the synthesis of a films' heterogeneous elements: "The mixing apparatus allows a greater control over the establishment of relationships between dialogue, music, and sound effects and, in practice, the level of the dialogue generally determines the levels of sound effects and music" (Doane 34). In "Technology and Film Sound," Belton echoes this, maintaining that in the early sound period (1926-29) sound was typically mixed while being recorded during production and thus indexically locked to the pro-filmic event (Belton 70). For Belton, subsequent development of sound editing and mixing reflects an increase "in control and in the ability to duplicate the

[1] John Belton refers to the mixed film as "the final stage of the 'realization'" of the image resulting from the post-production process (70).

[2] Those versions on Amazon were as of July 12, 2013. Wikipedia has an exhaustive (and undersourced) page on the changes between the versions:

sound not of the pro-filmic event but of that event's photographic image" (70). In her article "Ideology and the Practice of Sound Mixing," Doane notes Hollywood's belief that post-production sound possesses the ability to "infiltrate and transform" film (Doane 54). Thus, scholars and practitioners alike recognize the force of filmic sound on the spectator and, by implication, audio's synchronization with the visual during the post-production process.

Film, of course, always relied on post-production. Editing either in camera or after production began with early filmmakers, and the parallel process of sound editing was a new and critical development in this era. In addition, with live action filmmaking, exposed negative typically needs to be developed, prints made, and typically titles created and inserted (to name a few processes). I will argue that "silent" film had its own nascent form of post-production where audio from live performers combined with the visuals from the supplied print during exhibition. This form of post-production also included possible involvement from many others including projectionists, theater managers, and censors, some acting with their own aesthetic intent. With their intervention, as Rick Altman points out in "Cinema as Event," film presentation was far from standardized in the silent period "when differences in accompaniment (piano, organ, orchestra, lecturer, voices behind the screen, effects, etc.) served as an important method of individualization, along with the other films, acts, and music on the program, not to mention the ushers' costumes, the theatrical décor, giveaway programs, and what have you. However much producers would like to think of film as an ideal image, automatically conveyed to the ultimate ideal consumer, we all know that the film must pass through the hands of a projectionist, whose performance is constantly open to criticism" (Altman 8-9). I maintain that the introduction of the analog post-production and its product, the soundtrack print, removed most of the above forces of individualization of exhibition. Thus, one form of post-production replaced an early, quite aesthetically different version, one with far more forces for potentially non-standardizing performance for audiences and their reception, intentional or otherwise. This critical transfer of final creative control from the set and venue to the lab and the studio is the unconsidered revolution in the shift to sound. The introduction of sync sound eliminated the input and impact (creative and otherwise) of a host of film workers and practices in the era and created a shift in control, leading to far greater standardization of a film's creation.

With the introduction of sync sound and, with it, analog post-production, a new aesthetic method emerged whereby the instantaneousness moment of production (the exposing of a frame for sound and image) becomes augmented by a process of its manipulation that could also take far longer, be more flexible, and more in control. Cinema becomes less a creature of the set and instead shifts its creation to the studio and the lab in a new aesthetic method. In the *Academy Technical Digest* of 1929-30, the very start of the analog era of post-production, L.E. Clark, technical director of sound at Pathé Studios, wrote: "In many of these arts, the re-editing process can be allowed to go on as long as it is desired, because the work is usually that of an individual and his is the only time lost. In the case of the motion picture with tremendous expenses going on hourly, only a limited amount of changing can be allowed" (Clark 245). With this transition in filmmaking, money

becomes potentially the sole limit for post-production's aesthetic control. As opposed to the moment of the set, post-production develops a superior ability to create a sense of the now. Editing remains the core of post-production's power, an idea well covered in film studies going back to Béla Bálazs sectional pictures and the Soviet filmmakers' compelling writing (Lev Kuleshov and Sergei Eisenstein, to name two) on the power of montage. The larger concept of analog post-production serves to provide more material for that process to thrive.

This dissertation will focus on the American studio system of post-production and discuss how and why this process came to control much of a film's creation. Most scholars approach the study of films by analyzing the finished product, the film "text." My intervention is to study the actual work and discourses of post-production itself as well as the aesthetic effects of such work. The consideration of post-production lies beyond the scope of most approaches as it is not quite the province of auteur and genre studies (though science fiction is the one genre where scholars have focused on special/visual effects and some post). As part of this study, I wish to call for a broader consideration of the post-production process as an area for critical analysis for film studies.

Even the term post-production needs to be defined, as under this broad name it could literally refer to myriad tasks that take place, if we use "post" literally, after production — developing film, printing negatives, editing, mixing, scoring, negative cutting, visual effects work, and color correction. Some aspects of post-production, such as negative cutting and color correction, have been little discussed, while other areas, such as editing and visual effects, are far more studied. Editing is perhaps the most written-about aspect of post-production with analysis back to the earliest years of film studies, with much noted work from early Soviet and 1970s French film theorists. Walter Murch points out the centrality of editing to film, explaining that every shot is composed of edits, a linking of images from frame to frame: "The truth of the matter is that film is actually being 'cut' twenty-four times a second. Each frame is a displacement from the previous one — it is just that in a continuous shot, the space/time displacement from frame to frame is small enough (twenty milliseconds) for the audience to see it as *motion within a context* rather than as twenty-four different contexts a second" (Murch 6). Once filmmakers develop film and edit two shots together, they enter the realm of post-production.

For the purposes of this dissertation, I will primarily focus on a fairly narrow purview — the process in the American narrative filmmaking system that demands and develops visual and the audio elements of a film and synchronizes them in the deceptively understated name of the "mix"—perhaps the most significant and least discussed of all film acts with its near mystical combination of film work's art and science. In the mix, distinct groups of film workers (production and post-production, visual teams and sound teams) see their labors combined into a single entity.

Altman, one of the few major theorists to comment directly on the mix, remarks on its importance: "Every time I have had the privilege of observing a Hollywood mix, I have learned something new about who contributes what. Far from reinforcing the notion of sound designer as king, these experiences have convinced me yet again of the importance of looking closely at so-called technical personnel at all levels. Their practice contains the very knowledge that lies at the

heart of the system" (Editors 70). This "heart" of the system is where audio and visual meet in the mixing studio. In his book *Audio-Vision,* Michel Chion defines such a combination as synchresis when it occurs in the spectator's mind. Combining "synchronism" and "synthesis", the process of "synchresis" provides the crucial last step of combining these two distinct elements and "is the spontaneous and irresistible weld produced between a particular auditory phenomenon and visual phenomenon when they occur at the same time. This join results independently of any rational logic" (Chion 63). Thus, the phenomenon of synchresis, a "weld" that makes film possible, is a mental fusion that results from and mirrors the labors of post-production. Chion maintains that, "Synchresis is what makes dubbing, post-synchronization, and sound-effects mixing possible, and enables such a wide array of choice in these processes" (63).

Chion describes this as an audio vision contract, one that may create a sense of harmony between audio and visual — "that is, as the opposite of a natural relationship arising from some sort of preexisting harmony among the perceptions" (xxvi). Chion defines this contract as follows: "This audiovisual relationship is not natural but rather a sort of symbolic pact to which the audio-spectator agrees to forget that sound is coming from loudspeakers and picture from the screen. The audio-spectator considers the elements of sound and image to be participating in one the same entity or world" (222). While Chion refers to this near mystical process as mental, its counterpart — post-production — grants film practitioners considerable aesthetic power in creating and guiding synchresis: "Synchresis permits filmmakers to make the most subtle and astonishing audiovisual configurations" (64). Thus, film could produce often through the artifice of post-production what Altman in "The Evolution of Sound Technology" pronounces the sound film's fundamental lie — the image produces the audio when it in fact sound remains independent from image (46). In synchresis and post-production alike, two forces combine with no pre-existing harmony and then find impact neither could obtain independently, a hallmark of film as a medium.

In "Technology and Aesthetics of Film Sound," John Belton writes that this process became institutionalized by the American studio system and allowed filmmakers more control and ability to create a filmic version distinct from the pro-filmic moment: "The growth of the postproduction departments within the studio system institutionalizes the separation of sound and image that frees the former from its ties to the latter. The building of the sound track, using the image rather than the pro-filmic event as a guide, now becomes a final stage in the 'realization' of the image" (Belton 70). Thus, less indexicality can allow for more "reality" for the spectator, a central focus of post-production, as Murch writes in his introduction to Chion's *Audio-Vision*:

> It might have been otherwise — the human mind could have demanded absolute obedience to "the truth"— but for a range of practical and aesthetic reasons we are lucky that it didn't: the possibility of reassociation of image and sound is the fundamental stone upon which the rest of the edifice of film sound is built, and without which it would collapse. This reassociation is done for many reasons: sometimes in the interests of making a sound appear more

> "real" than reality (what Chion calls rendered sound) — walking on cornstarch, for instance, records as a better footstep in snow than snow itself; sometimes it is done simply for convenience (cornstarch, again) or necessity — the window that Gary Cooper broke in *High Noon* was not made of real glass, the boulder that chased Indiana Jones was not made of real stone, or morality — the sound of a watermelon being crushed instead of a human head. (Murch XIX)

While Murch here refers to sound, I place his thoughts in the larger context of post-production, the force whose craft creates such moments. Despite this, the term "post-production" remains a term rarely used in film scholarship.

An Invisible Art

Academia has largely overlooked post-production, I believe, because in part the process itself is designed to be invisible, something particularly noted by French scholars. Post-production resides in what Jean-Louis Comolli refers to as the "hidden and unreasoned areas" of film (Comolli 47). He specifically refers to sound grading and mixing as part of a realm of film repressed by the "ideology of the visible and what it implies: the masking and effacement of work" (Comolli 46). Comolli compares post-production to a powerful and lurking mental process (the unconscious) as Chion does due to its lack of seeable but undeniable presence that is suppressed by production: "The visible part of film technique (camera, shooting, crew, lights, screen) suppresses the invisible part (frame lines, chemistry, fixing and developing, baths, and laboratory processing, negative, the cuts and joins of montage technique, sound track, projector, etc.) and the latter is generally relegated to the unreasoned, 'unconscious' part of cinema" (Comolli 45). He writes in 1976 of "the almost complete lack of any theoretical work on either the sound track, for instance, or on laboratory technique…. The lack can only be explained by the domination of the visible in the practice of cinema as in reflection on the cinema (Comolli 47). In "Ideology and Practice of Sound Editing and Mixing," Mary Ann Doane also characterizes sound work as, quoting Comolli, the "ideology of the visible" and places the reason for it in a social context: "The effacement of work which characterizes bourgeois ideology is highly successful with respect to the sound track. The invisibility of the practices of sound editing and mixing is endured by the seemingly 'natural' laws of construction which the sound track obeys" (Doane 54). For Doane, practitioners themselves strive for such invisibility: "In an industry whose major standard, in terms of production value, might be summarized as 'the less perceivable as a technique, the more successful it is,' the invisibility of the work on sound is a measure of the strength of the sound track" (54). Even the very name of post-production marginalizes its existence, as it is defined as merely subsequent to another, presumably primary event — production. Writing in "Ideological Effects of the Basic Cinematographic Apparatus," Jean-Louis Baudry argued that cinematography also conceals ideology and the instruments of the technical base (Baudry and Williams 41). The purpose in my work, however, is not to reconsider the argument over existence of ideology in film technology, but rather to consider the aesthetic ramifications of analog post-production's introduction, the importance of which I will discuss below.

Why Study Post-Production?

In this section, I will discuss two reasons for the importance of post-production. First, the process is the primary "author" of film, as the films we consume historically result moreso from the aesthetic control of post-production than production. Thus, we would be remiss not to discuss the process that creates the work we purport to study. Second, in this scheme, its needs are such that the production practice becomes subservient to the desires and demands of post-production. Post-production's need for intercutable audio and visual elements forced considerable change upon production practices, requirements particularly apparent during the transition to sync sound in the late 1920s and early 1930s. The basis of continuity filmmaking, different shots of a single action, requires production to obtain material that can be edited together, thus potentially providing options during post-production. Providing such materials (audio and visual elements) requires an exacting discipline of technique and technology both in the manufacture of equipment and its use on the film set.

A 1958 interview of Orson Welles by André Bazin and Charles Bitsch features a discussion of both post-production's ability and aesthetic control. Welles continually rejects Bazin and Bitsch's attempts to place a film's creation in the realm of production and the director, and instead places it in the post-production process, specifically referring to editing: "For me, almost everything that is called *mise en scène* is a big joke. In the cinema, there are very few people who are really *metteurs-en-scène* [directors]; there are very few who have ever had the opportunity to direct. The only *mise en scène* of real importance is practiced in the editing. I needed nine months to edit *Citizen Kane*, six days a week…. But for my style, for my vision of cinema, the editing is not one aspect, *it is the aspect*" (Bazin and Bitsch 39, "Interview"). To Welles, the lengthy, reflective post-production process is far more authorial than the more mundane fraction of a second on set required exposing a frame, saying in a direct challenge to the philosophies of Bazin and Bitsch:

> Directing is an invention of people like you; it is not an art, or at most an art for a minute a day. This minute is terribly crucial, but it happens only very rarely. The only moment where one can exercise any control over a film is in the editing. But in the editing room, I work very slowly, which always unleashes the temper of the producers who snatch the film from my hands. I don't know why it takes me so much time: I could work forever on the editing of a film. For me, the strip of celluloid is put together like a musical score, and this execution is determined by the editing; just like a conductor interprets a piece of music in rubato, another will play it in a very dry and academic manner and a third will be very romantic, and so on. The images themselves are not sufficient: they are very important, but are only images. The essential is the length of each image, what follows each image: it is the very eloquence of the cinema that is constructed in the editing room. (Bazin and Bitsch 39, "Interview")

To Welles, the artistry of filmmaking is in the editing room, not the set, and shot lengths create a film more than the composition of the shots themselves.

Furthermore, editing is a slow prospect, not directing, which is at best "an art for a minute a day." Welles's aesthetic beliefs on filmmaking ran contrary to Bazin.

In "Evolution of the Language of Cinema," Bazin, a champion of the director as auteur, specifically wrote about Welles and *Citizen Kane* and placed the artistry of film with the director and his use of the camera on set: "The influence of *Citizen Kane* cannot be overestimated. Thanks to the depth of field, whole scenes are covered in one take, the camera remaining motionless. Dramatic effects for which we had formerly relied on montage were created out of the movements of the actors within a fixed framework" (Bazin 33). Ironically, Bazin praises Welles for his on-set work, such as his use of the long take with depth of field, requiring less post-production, whereas Welles places his aesthetic ability expressly in the processes of postproduction. Linwood Dunn created composite shots for *Citizen Kane*, and in an interview, he said that "a good half" of the shots of the film used "special effects" done by composites and special printing (Eyman 110). Thus, a film Bazin singles out for praise as employing long shots and deep focus cinematography uses, according to Dunn, special post-production work on half of its shots. Bazin of course does not deny Welles used post techniques for his film, but he finds the artistry in scenes where Welles apparently does not. For Dunn, he believes Welles' artistry included his ability to use "an optical printer the way an artist uses a certain kind of paint brush" (110). For Dunn and Welles, they find great artistry and aesthetic control in the use of post-production technique and technology.

The Question of Post-Production Authorship

Perhaps the clearest way to realize the relationship between post-production and authorial control is to ask what is "the" film. Today, films often exist in multiple forms, making us question what exactly a film is. Such forms include: theatrical versions, television versions, DVD, special editions, re-released theatrical, re-released DVD, Blu-ray, recut, director's cut, airline versions, foreign versions, versions of various ratings final cuts, uncut, alternative, definitive, and extended editions. Depending on which version one sees of *Brazil,* the end and thus outcome is quite different. *Caligula* is perhaps more renowned for a variety of versions than for any single one. For example, for the film *Caligula*, Amazon.com sells The Imperial Edition, Unrated Edition, R-Rated Edition, 2 Disc Uncensored and Uncut Version, Unrated Twentieth Anniversary Edition, Uncut Edition, Director's Cut, and 10th Anniversary Edition, and Unlimited Edition.[2] A similar array exists of the *Star Wars* film versions, especially of first film, *Episode IV*.[3] In an interview published in a 1997 *American Cinematographer*, George Lucas said he hoped his fans would come to view the Special Edition version of *Star Wars* (1997) as *the version* of the film,

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[2] Those versions on Amazon were as of July 12, 2013. Wikipedia has an exhaustive (and undersourced) page on the changes between the versions: http://en.wikipedia.org/wiki/Caligula_(film)#Versions. In just one sign of the differences between versions, the listed lengths vary from 105 to 156 minutes long.

[3] IMDB.com has a page with various changes amongst the versions: http://www.imdb.com/title/tt0076759/alternateversions. Wikipedia has a page with detailed lists of the changes of the various versions: http://en.wikipedia.org/wiki/List_of_changes_in_Star_Wars_re-releases

insisting it was the version he always intended to make: “There will only be one [version]. And it won't be what I would call the 'rough cut,' it'll be the 'final cut.' The other one will be some sort of interesting artifact that people will look at and say, 'There was an earlier draft of this.' (Magid 70) Of course, when Lucas re-released the film on DVD in 2004 and Blu-ray in 2011, it was modified once again. Most of the production was long done, as post-production was the source of these additional versions.

Altman maintains that there are multiple versions of films “based on diverse social and industrial needs,” noting that critics have “made a fetish of the ‘original version’” (Altman 6, "Cinema as Event"). Altman argues that critics have fetishized the concept of the “original film” and ignored such variations of presentations and prints, treating the film as a text of sorts on which to present their particular reception stance (6). Altman acknowledges that current theaters tend toward what he refers to as the “zero degree of performance (standardized spaces, automatic projection, a program limited to the feature film)…” He, however, admonishes critics for having “regularly neglected important elements of early film exhibition… Cinema will recover some of its richness when we learn to remember for most of its history it was a performance-oriented medium — less spectacularly so than vaudeville, perhaps, but performance-oriented nevertheless” (Altman 9). In early films, such variables in performance resulted from the live musicians and the quality, presentation, and state of the print. How can we claim to study an art form without acknowledging its variability for audiences both then and now? In silent film, with such enormous variability between various presentations, the movie can be said only to have existed in a singular state during the specific performance/exhibition. I will argue the introduction of analog post-production removed much of the variation of presentation and substantially standardized the form of a film, even if that film has myriad versions. Each of those versions themselves is standardized — the DVD Imperial Version of *Caligula*, for example, should remain the same regardless of when and where one buys it.

Post-Production dictates production

To achieve its control over and authorship of the final product, analog post-production seeks material and elements to manipulate in its process and to that end places demands on production. The design for a continuity shoot typically includes repeated takes from multiple angles and distances, often of the same pro-filmic action. In addition, sound from various sources is recorded onto different tracks, allowing for maximum flexibility in its manipulation. The continuity filmmaking process is designed to provide the post-production process with a variety of material of the same action to craft a scene with a sense of continuity. After 120 years of filmmaking, there is only one creative principle that could justifiably be called a rule and one that is rarely broken in the American system — the 180-degree rule. This guideline states that if two characters are in a scene, the production should imagine a straight (180 degree) line between them, and that when shooting, the cameras should all be located on one side in order for the film’s action to appear continuous when the shots are edited together. This mandate from post-production dictates where cameras may be placed. Of course, placing all the cameras on the same side of the axis of action is the only way to be sure they do not film each other.

Engineer Austin Lescarboura writes of the need that production obtain proper material to create continuity during editing in his 1921 *The Cinema Handbook: "*There is nothing more confusing than to have a jumble of close-ups and long shots strung along into one film without continuity or relationship of any sort. The cameraman, therefore, should always bear in mind the continuity of the pictures he is making and, to be on the safe side, even take additional scenes when he is afraid there may be missing links in the film story" (Lescarboura 326). He writes that directors can use different lenses on shots, allowing the camera to film close-up and medium shots from the same camera position and thus increasing the chance the various shots can be intercut: "Thus the camera does not have to be shifted, and perfect continuity is secured in going from the long shot to close-ups and back to long shots" (Lescarboura 173). In the 1920s, engineers designed cameras that could film close-ups and medium shots at the same time, thus mandating continuity of action in the shots. They also could create close-ups from medium shots as well. In the American studio system, post-production prizes the ability to match shots in editing, requiring similar performance and look in shots of the same action.

In 1928, director Irwin Willat wrote how the developing continuity system of editing required systematic precision in how his profession did its work:

> There is seldom a picture shown that does not have several instances in which the actors move or look in the wrong direction. How many times have you gone to a picture theater and seen a man leaving an interior, say, from right to left, and then upon the exterior seen him come out from left to right? While the mind is quick to adjust itself to this, nevertheless it is a jarring note and distracts consciously or unconsciously from the story…. If your character is walking away, moving from left to right across the axis of the camera lens, then in order to have a smooth continuity of action, and to give the illusion that the character is continuing in one direction in succeeding scenes, it is necessary that the character or object continue to move from left to right, regardless of how the actual locations may be relative to each other. (Willat 285)

Willat here writes of how the requirements of editing require filmmakers to shoot scenes in certain ways in order to preserve the principle of what today is referred to as continuity of action. For Willat, if this scheme is not followed, the film with such "continuity errors" (as Willat writes) may be subpar and jeopardize audience immersion. By 1928, he implies such technique as basic and fundamental, though he feels far too many directors fail in this "basic technique": "All this explanation must make you think that I have prepared a paper for a kindergarten, but when the director's mind is full of the many things he has to think of, he quite often forgets or gives little attention to the camera, or the angle in which he is photographing, and some very serious mistakes have been made necessitating expensive retakes or leaving the film incorrect when shown" (Willat 287-8). Failing to follow the needs of post-production is for Willat improper directing.

Early filmmakers developed techniques to obtain usable footage for post-production such as multi-camera shoots. In an article titled "Photographing with

Multiple Cameras," cinematographer Karl Struss (noted for his work on *Sunrise*) describes the multi-camera production process, one where six cameras film the same pro-filmic action typically from a variety of angles and/or distances, thus ensuring at least the action will match in the various shots and the various footage may be intercut in a final edit..(Struss 478).[4] Struss writes the production shot nearly a thousand feet of footage for each camera used for an eleven minute scene, thus providing extensive material and options for post-production. He also praises the "organization and co-operation everyone gave" required for such filmmaking, specifically noting that the actors needed "to know all their parts perfect" and the camera crews must follow the action precisely. Indeed, such cooperation between specialists became a hallmark of filmmaking, with a number of specialists laboring to produce such intercutable footage. Writing in 1928, Cecil B. DeMille discusses in detail a single shot from *King of Kings* (1927) that required 22 the effort of different, distinct departments: director, scenario writer, art director, costumer, and actors (including 200 to 300 extras, describing the complex interaction of different specialists from painting, costuming, photography, performance, and engineering experience:

> Then we come to the starting day. All the 22 departments have been functioning and your set is ready. The actors are there in make-up, ready to begin. If you have a great big set, the number of cameras is important because sometimes, if you have, we will say, 200 or 300 people in the set you are working in, you use as many as 14 cameras on one scene, to take your close-ups and long shots at the same time with different lenses. A one-inch lens gives you an enormous field of view. A three-inch lens gives you a close-up. In that way you can match your action for cutting. (DeMille 302)

Thus, for the edit, DeMille supplies footage of the same pro-filmic action from 14 cameras with multiple lenses and thus focal distances. This requires formidable technical standards and execution to produce material matching both look and action — a hallmark of the continuity based post-production system. Often scholars consider continuity editing, but behind that is the need for production to provide the material during the filmmaking in a continuity shoot. For DeMille, his goal is to combine this footage into a single presentation of the profilmic action:

> If in a long shot a man raises his arm to strike somebody, you want to see that blow hit, so you use a three-inch lens centered on that blow. On the long shot you cut the film from the moment the man raises his hand. Then you put in your close-up shot which just shows the two men, so the audience sees who is struck and who is striking and gets the psychology of it and you come instantly back to your long shot and

[4] Struss also notes the efficiency of such filmmaking: "By being able to photograph all the action simultaneously with six cameras, and from six different viewpoints, it was possible to complete this scene, originally scheduled to take five days, in the short space of two days and without any rush" (478).

> show the effect of your crowd rushing in to see what has happened. That took a great many years to work out and discover. (DeMille 302)

What DeMille describes here as "discovering" is what today is known as continuity editing and, more specifically in this case, a fundamental editing principle now known as a cutting or matching on action, whereby editors place the cut between two shots of the same pro-filmic action during motion as opposed to before or after it. The movement provides greater diegetic immersion and, for DeMille, more impact for the scene in the cutting from long shot to close-up. The two shot types possess different "psychology"; "Then the psychology of the close-up and the long shot is very, very great. A long shot photographs action. A close-up photographs thought" (304). By combing such different images, films obtain the ability to create "psychological effect," as DeMille refers to it, in the spectator through editing and thus post-production: "That is the way you handle the psychology of that. You jump to the spot where you want to register thought. (DeMille 304) The continuity system allows DeMille to such impact in the spectator in post-production but only if production provides post-production the needed footage.

As seen above, the continuity production process pre-dates analog post-production and indeed began during the silent film period, but the introduction of analog post-production did lead to more precise demands on production. Continuity shoots would only get more complicated with the introduction of sync sound and the need to record audio during production. The stories are, of course, legion of the many changes that sync sound brought to film production, including some entertainingly portrayed in *Singin' in the Rain*. Some less-discussed shifts, however, were subtler and yet still fundamental. As film engineers K.F. Morgan and T.E. Shea wrote in a 1930 article, post-production work involving sound mandated far more careful production practice and preparation. They write that in the days of the silent photoplay it was often the practice to schedule the filming of a film almost before the story was written. During the actual photographing of the picture, filmmakers shot thousands of feet of film of large scenes at random in order to ensure that enough material would be available for the film cutters and editors to patch into a good story (Morgan and Shea 115-6): With sound recording involved, they note filmmaking could no longer be random in its collection of footage nor in the performance recorded: "Actors were directed so that the memorizing of lines was not important. With sound it has been necessary to thoroughly plan and rehearse each scene beforehand. Actors must memorize their lines and directors remain silent during the recording" (Morgan and Shea 115-6).

Editor Maurice Pivar[5] wrote of the demands required for filmmaking during the sound era in a 1937 article:

> For that reason, preparation for the production of pictures today is as vital as the actual shooting…. The question of preparation applies also to effect the scenes on the sets. In the silent days, a director had to watch the positions of his actors when changing from one angle to another. He had to make certain that he picked up his actors in the

[5] His extensive editing credits include *All Quiet on the Western Front* (1930) and *Frankenstein* (1931). http://www.imdb.com/name/nm0686090/?ref_=fn_al_nm_1

> same positions when changing the camera angle. Today, he must watch not only positions of the actors but also note the words spoken when the actor is in a certain position. Perhaps the greatest amount of grief that confronts the editor of today results from the apparent carelessness of some directors who overlook this vital point. (Pivar 367)

As Pivar writes, audible dialogue required great care in filmmaking and increased the difficulty of maintaining a continuity of action in footage. To achieve proper footage usable by post-production, Pivar writes that directors in the sound era need to formulate a plan to achieve the necessary footage, and here he writes of various techniques to do so: "Some directors safeguard themselves by overshooting their pictures; that is, they shoot scenes from many different angles, for protection. Other directors, being more familiar with cutting pictures, cut most of their scenes in the camera. Both methods have their advantages and disadvantages. From the producer's standpoint, overshooting pictures is very expensive; and from the editor's standpoint, undershooting pictures causes untold grief" (Pivar 368-9). Pivar is concerned with what subsequently practitioners called coverage, a term rarely if ever read in an academic analysis of filmmaking. For film practitioners, few terms are more central to their filmmaking plans. Coverage refers to the footage required by a production to make sure that post-production can edit a version together — thus, making sure a script is "covered." The need for coverage gave rise to a new position of the sound era dedicated to it: the "script girl," "continuity girl," or, as the role is known today, "script supervisor."

Apart from added demands on production, sync sound also made post-production a far more difficult task and placed great restrictions on editors, as Pivar also noted: "With the introduction of sound into pictures, the latitude of the editorial department has been lessened to the extent that where originally the possibilities of realigning and recutting silent pictures were unlimited, today we are confined more or less within the limits of dialog" (Pivar 367). Writing an early history of this transition era published in 1942, editor Frederick Y. Smith wrote that film editing became more technically complicated as well, mandating extra skill and equipment:

> With the advent of sound, film cutting became a much more involved process than it was in the era of silent pictures. In those days it may have been possible to edit a picture with a work-bench, a set of rewinds, a pair of scissors, film cement, a viewing device, and a receptacle for the film. Since the introduction of sound, film cutting has become much more technical; and before considering the artistic phase of editing, we must first become acquainted with the mechanical side of the business. This necessitates a description of the materials with which the editor works, the tools at his disposal, and the application of these tools to the materials at hand. The tools of the cutting room consist of reels, rewinds, flange, synchronizers, scissors, film cans, bins, racks, a splicing machine and a viewing machine (moviola). (Smith 285)

As film moved through the sync sound era, practitioners developed more sophisticated technique and technology to edit their work, and thus increased the

demands and requirements on post-production to finish a film, an evolution that continues to this day. As filmmakers' mastery over the creation of filmic audio and visual materials increased, their options for aesthetic impact of a movie's form increased, a critical shift in filmmaking power. Considered in this sense, continuity editing serves to create options for practitioners in the post-production process a flexibility only increased by the further evolution of filmmaking technique and technology.

Methodology — Practitioner Theory

As noted above, film workers labor to make post-production invisible. Thus, I argue the best way to study post-production is to consider the writings of practitioners themselves on the process. My writing and research is based on industry discourse — interviews and publications in film professional journals and trade periodicals. In addition, I have worked for 20 years as a filmmaker with perhaps my most relevant experience for this dissertation being a position as post-production supervisor during the 1990s on *Spanking the Monkey* (1994), *The Last Good Time* (1994), *Wigstock: the Movie* (1995), *Manny & Lo* (1996), and *Flirting With Disaster* (1996). In this role, I supervised, scheduled and budgeted the post-production process on those films.

Studying the work of practitioners should be considered central for film studies, given academia's open acceptance of the writings of such filmmakers as Sergei Eisenstein, Lev Kuleshov, Vsevolod Pudovkin, Dziga Vertov, Jean Epstein, Béla Balázs, Germaine Dulac, Louis Delluc, and Walter Murch. The list could be further expanded by including the writings other types of artists who are theorists (such as composer Michel Chion) and those whose work is clearly inspired by practitioners (such as André Bazin). Despite this, John Thornton Caldwell describes in his book *Production Culture* a "standard split between film 'theory' and film 'work'" (Caldwell 7). Caldwell also notes a "kind of inverse credibility law: The higher one travels up the industrial food chain for insights, the more suspect and spin-driven the personal disclosures tend to become" (Caldwell 3). Caldwell suggests two methodologies to address these issues. For one, he maintains that any information gathered from practitioners within a context of industrial practices, technologies, and discourses. Secondly, he proposes to examine the interactions and actions of so-called below-the-line film workers, sources he believes are too often overlooked in film studies. They may also more accurately reveal the stakes of production and post-production practices, as they are more "spin" oriented than those in more powerful positions in the film industry. [6] In doing so, Caldwell also seeks to address a bias — film studies has long privileged and prioritized the visual even in its consideration and acceptance of practitioner theorists, as most of those listed above are director/auteurs. The study of technical and production workers would help counter this. In "Cinema as Event," Altman also notes the lack of exploration of the thoughts of film practitioners, particularly so of the below-the-line realm: "In the past, little attention has been paid to a film's technical credits; the laborers have

[6] Caldwell remarks in a note that he had an easier time talking tech with cinematographers and editors than talking those higher on the Hollywood power scheme, specifically mentioning shop executives and agents (Caldwell 375, note 6).

systematically been passed over in favor of the architect and contractor. Conception has been preferred to execution, to the point where critics have apparently convinced themselves that film technicians do no more conceiving or take no more initiative than ditchdiggers" (Altman 7). I believe as Altman and Caldwell — that despite any perceived risks of studying the practices and discourses of film workers of all levels, they are a rich and overlooked source for information and views on the very nature and active, international development of the American film system.

Chapters

For this dissertation, I will primarily focus on a transitional eras in post-production during the emergence of synchronized sound in the late 1920s. Caldwell points out, "new tools emerge at, and as, unruly moments involving the realignment of worker relationships and entitlements. Tools, that is, must be understood with worker labor practices and cultural formations" (194). Chapter two, "Early Film and its Nascent Post-Production Scheme," reframes the debate regarding the transition to sync sound into an argument that the true revolution of the era was the introduction of analog post-production. Early film had a nascent form of post-production that took place in theaters, where musicians in the venue would create variable audio in the venue to match the visuals of the print. The introduction of the soundtrack resulted in a far more standardized product by ultimately removing much of their influence and aesthetic input, as well as the influence of a variety of other forces.

Chapter three, "The Rise and Fall of the Monitor Man," focuses on this controversial figure of the transition to sync sound period. I explore the powerful though transitional reign of the Monitor Man, a brand of recording engineer who briefly dominated Hollywood during the introduction of sync sound. His declared mandate was to record a live sound mix with audio, music, and effects elements during filmmaking. He rapidly became regarded as a powerful, authoritarian, and controversial before his brand of recording proved too inflexible for the film industry. A lack of flexibility to alter this recording after its creation doomed this technique. Flexibility in audio and visual materials provides post-production with its authorial power, and that process typically mandates alterability of such elements. Analyzing trade periodicals, I track how his fall was as swift as his rise.

Chapter four, "The Motion Picture Engineers and the Emergence of Aesthetic," will discuss how film technicians' desire for and devotion to standardization created the basis of post-production and the continuity system. With their care, materials obtained from various sources, both visual and audio, could be more freely combined in post-production. Thus, film becomes freed from its indelible link to the pro-filmic image and shifting the creative act from the set to the lab. Without their efforts, we would be left with shots living in uncomfortable relation to each other likely with jarring sound and picture changes, creating a fractured diegetic and limiting audience immersion.

My conclusion, "Analog Post-production — Past and Future," discusses this dissertation, provides a case study on diegetic camera films as a seeming challenge to that system, and I conclude with analysis on two trends in current post-production. For the case study, I analyze the emergence of diegetic camera or so-called "found footage" films, concentrating on a close analysis of *The Blair Witch Project* (1999) as an archetype of this film form. I maintain that this film represents

an apparent break in the aesthetic of post-production as established during the transition to synchronized sound as discussed in this dissertation. This aesthetic manifests production while maintaining invisibility for post-production, all whilst pursuing audience immersion.

By studying film post-production and from this perspective of practitioners, I maintain that we will better appreciate the nature of the medium, one where two distinct artistic and elemental forces — the visual and audio — are combined. Production becomes tasked with providing materials for post to maintain flexibility and increase potency in the film's creation, with a central irony of filmmaking being that more artifice in post-production may lead to more realism in presentation. With the introduction of sync sound and subsequently analog post-production, film becomes less a creature of the set — of Welles' moment — and instead shifts its creation to the studio and the lab in a new aesthetic method, where that instantaneousness of the moment is created in a process that could also take far longer and be more flexible. In the *Academy Technical Digest* of 1929-30, the very start of the analog era of post, L.E. Clark, technical director of sound at Pathé Studios, wrote: "In many of these arts, the re-editing process can be allowed to go on as long as it is desired, because the work is usually that of an individual and his is the only time lost. In the case of the motion picture with tremendous expenses going on hourly, only a limited amount of changing can be allowed" (Clark 245). With this transition in filmmaking, the process of creating a film becomes the result of analog post-production and a potentially limitless system.

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Chapter Two: Silent Film and its Nascent Post-Production Scheme

I argue that the silent film era had its own nascent form of post-production, one where the visuals in the print were married with typically non-standardized audio from live performers at the theatres. As I mentioned in the introduction and will discuss in depth below, there were also myriad other factors that de-standardize the reception of a film during exhibition. In the American studio system, however, the introduction of sync sound and the implementation of analog post-production in the late 1920s removed or severely limited these influences from exhibition, which led to far more standardized film form. The most important factor in this aesthetic shift was the introduction of the soundtrack. Not only did this create a more standardized audio but it also made intervention at the theatres far more difficult to do without seriously disrupting continuity. The creation of the soundtrack became the province of the analog post-production process. I maintain that the introduction of analog post-production practices in the American studio system during this transition not only ended the silent film's era's version of the process but also cannibalized its nascent post-production schemes, a shift disguised by its ultimate textual transparency. As this shift took place, the emerging practice of analog post-production — with its reliance on recording, obtaining, and manipulating audio and visual elements — not only changed exhibition and post-production but also shaped production practices — to be the point where production could be argued served to create elements for subsequent manipulation in post. The initial disequilibrium caused by the shift to sound quickly returned to a state of recognizable equilibrium, and new technologies and post practices were developed and put into place with a new aesthetic. This transition incited technological change and demanded new practices and engineering expertise as it ended most aesthetic intervention in the theatres and transferred that authority to the studio and lab. In addition, the creative process of analog post-production differs from the live, instantaneous moment of silent film era post as I explored in the introduction.

This chapter will explore this transition in post-production practices by studying the words of practitioners found in trade periodicals and interviews, as their philosophies and resulting efforts created the textual transparency (and even invisibility) described by Mary Ann Doane and J. L. Comilli. First, I will review existing scholarly debates surrounding this transition. Second, I will discuss the aesthetic transition taking place during the shift from silent film-era post-production to the synchronous sound era.

David Bordwell, Donald Crafton, Charles O'Brien, and André Bazin largely dismiss the idea that the transition to sound fundamentally altered the nature of films or even their production. The period, however, ushered in a new system of post-production, the true and under-analyzed revolution of the age. In this new scheme, sound could be obtained before, during, and after production, carefully manipulated and tested, and then manifested and married in a typically consistent form with the visuals. This process manufactured a far more standardized soundscape in the soundtrack film, replacing most of the influence of the venue and

creating a far more standardized presentation. The changes during this transitional period in technique and technology were complex as the aesthetic control shifted from artists and technicians working in the venue to those working in studio and the lab.

Discussing the Introduction of Sync Sound — Missing the Revolution

Before we can consider the development of new post-production practices in the early sound era, we should briefly review the debate over the introduction of sync sound in the late 1920s. The focus of scholars engaging in this debate, I argue, obscures the larger and more important change — the rise of analog post-production. One commonly held view is that the introduction of sync sound was a revolution in film history and a break from the past. In his book *The Shattered Silents: How the Talkies Came to Stay,* Alexander Walker writes: "There had been no revolution like it…. There has never been such a lightning retooling of an entire industry — even wartime emergencies were slower — nor such a wholesale transformation in the shape and acceptance of new forms of mass entertainment…." (Walker vii). In *Cinema's Conversion to Sound*, Charles O'Brien summarizes this particular understanding of this transitional era: "The first major trend in sound-film historiography took form during conversion, when sound's introduction into cinema was widely seen as effecting a radical break from the cinema's past" (O'Brien 47). O'Brien, however, praises historians who debunk this impact of sync sound, hailing this approach as a significant change in film studies: "The repudiation of the notion of sound-as-crisis in the work of Bazin, Charensol, and other postwar critics counts as a major historiographical innovation. It invites comparison to the new historiography advocated contemporaneously by Braudel, and henceforth associated with the prestigious Annales School of historical study, which entailed a self-conscious effort to redirect the field of historical study away from its traditional concern with dramatic, crisis-like events and toward the subliminal effects of long-term study" (O'Brien 49). One example from O'Brien's list of scholars, Charensol, claims that it is "an error to separate totally the sound cinema from the silent" and argues that the conversion challenged work methods and certain individuals rather than posing any issues to filmmaking.[1]

Arguments that the introduction of sync sound constituted a radical break in film history often credit *The Jazz Singer* as spurring this transition. Crafton argues that the familiar "claim that this movie was the genesis of sound cinema cannot withstand scrutiny" (Crafton 4). For Crafton, the implementation of sync sound did not precipitate a revolution; rather, sync sound emerged as the result of an ongoing process of uneven change marked by frequent stops and starts. He sees the move to sound as a gradual process, a transition that falls far short of a radical transformation of cinema: "The addition of sound to cinema was not the paroxysm which the industry itself and popular writers describe, but it was a complicated and messy business, owing in no small part to the vicissitudes of mass audiences" (Crafton 8). For Crafton, sound developed in the late 1920s out of prior efforts to

[1] As quoted in O-Brien. Pg 49. From Georges Charensol, "Le Film parlent,: in *Le cinema par ceux qui le font* [The cinema according to those to wake it], ed. Denis Marion (Paris: Fayard, 1949), 54.

produce talkies, a shift that is less revolution and more evolution. He fittingly proclaims in a biological metaphor: "The talkies succeeded silent because that's how nature is. Little seeds grow into oaks" (Crafton 3).

For his part, Crafton emphasizes "the longevity — not the suddenness — of the transition to sound (4) as he seeks to debunk the image of sound's rapid and sudden impact, codified hauntingly by *Singin' in the Rain*: "In the best classical manner of the history film or the biopic, the film weaves a tapestry of fact, fantasy, and character development. It creates the illusion that, though the events happening before our eyes are fictional, the underlying factual basis is real. This, for the historian of the talkies, SINGIN' IN THE RAIN hovers in the distance as a ghost. It is the return of a repressed idea that transition to sound was *really* about the division between Old and New Hollywood" (3). Crafton instead argues the "opposite, less widely held view is that sound definitely changed cinema, but not across the board, and not as a radical overthrow of film convention… Film styles were adjusted or created to maximize Hollywood's traditional narrative-centered, psychologically motivated practices" (Crafton 543). Crafton finds that the greatest "revelation our study of American cinema's transition to sound is that sound *might* have started a revolution" while actually failing to do so (Crafton 544).

Likewise, in "The Evolution of the Language of Cinema," Bazin dismisses the idea that the transition to sound fundamentally altered the aesthetics of film: "We may most properly ask if the technical revolution created by the soundtrack was in any sense all aesthetic revolution. In other words, did the years from 1928 to 1930 actually witness the birth of a new cinema?" He argues that any differences between 1920s and 1930s films "is less a matter of setting silence over against sound than of contrasting certain families of styles, certain basically differing concepts of cinematographic expression" (Bazin 23). For Bazin, editing, a hallmark of post-production, changes little over this period: "Certainly, as regards editing, history does not actually show as wide a breach as might be expected between the silent and the sound film" (23); rather, the major criteria for classifying films becomes "those who relate to the plastics of the image and those that relate to the resources of montage, which, after all, is simply the ordering of images in time" (24). Bazin argues that directors' careers did not change with the introduction of sound: "On the contrary, there is discernible evidence of a close relationship between certain directors of 1925 and 1935 and especially of the 1940s through the 1950s" (Bazin 23). Thus, for Bazin, neither practice nor product significantly changed due to the introduction of sync sound in this era.

For David Bordwell, the introduction of sound film saw sound inserted into the already-constituted system of the classical Hollywood style without changing it, as he wrote in his chapter, "The Introduction to Sound," in *The Classical Hollywood Cinema*: "Silent filmmaking was not a radical alternative to sound filmmaking; sound as sound, as a material and as a set of technical procedures, was inserted into the already-constituted system of the classical Hollywood style. This means that sound technique was on the whole brought into conformity with silent filmmaking norms" (Bordwell, Staiger, and Thompson 301). Bordwell argues that in the era "shooting a sound film came to mean shooting a silent film with sound" (306). Rather than seeing sound film as a break with the past, Bordwell uses his conclusion that

moviemaking and movies themselves changed little to reinforce the narratively based Classical Hollywood Cinema system, where sound was merely an added element to his system. For Bordwell and Crafton, filmmakers in fairly rapid order created and developed new equipment (some still in use today, such as the boom and lavalier microphones) and often employed transitional technologies and methods that are no longer used (such as camera blimps and booths) to counter the majority of the problems deriving from sound production and recording. In fact, these scholars use the rapid adaptation of filmmakers to sound as further evidence of the lack of impact caused by significant technological change.

Bordwell, O'Brien, and Crafton do at times acknowledge the impact of sound on practitioners, but they conclude this transition made little real or lasting impact on film form or even filmmaking. For Bordwell, films retain their enduring formal "classicism" with a "classical" text, supporting his claims as well as his vision of an enduring industrial mode of production. O'Brien writes that this period represents a brief time of disruption and then normalization within a "decades long background of industrial and aesthetic stability" (O'Brien 51-52). Crafton argues that the industry saw little true change:

> And the motion picture industry did not turn topsy-turvy because of the talkies. No studios closed on account of the coming of sound; most of them increased their profits. Many theaters did go out of business during the time of the changeover, but whether these closures can be ascribed solely to the talkies is doubtful. There were abundant outside economic factors (radio listening and automobile driving are two obvious ones). For those theatres that made the switch, 1929 and 1930 were record-setting years for film attendance. The Depression caused the studios to scale back and theaters to close. But by 1931 sound production had been standardized and projection practice was again routine. This book emphasizes the longevity — not the suddenness — of the transition to sound. (Crafton 4)

For Crafton, for example, the transitional period did not turn "topsy-turvy" and emerged from the era in a similar form that it entered it. By focusing so exclusively on film form and industrial modes of production, all three historians dismiss the concerns and experiences of film workers despite the fact that this transition fundamentally changed the creative processes of filmmaking and altered, began, and ended the professional lives of its practitioners.

My research into trade periodicals, books and pamphlets reveals that practitioners often did write of the turmoil that came with the introduction of sound recording. In his 1929 book *Sound Motion Pictures*, Harold B. Franklin, the president of West Coast Theatres, describes the upheaval caused by sound film, with the catalyst being (also contrary to Crafton and *Singin' in the Rain*) *The Jazz Singer*: "In fewer than fifty months a mammoth industry has undergone a convulsion of changes too numerous to record. Studios are no longer the same. The very theatres are different. What was up-to-date equipment the year before last is now pathetically antiquated. Newcomers even threaten the kings and queens of the screen. Nor is the period of transition in any way approaching an end. The upheaval goes on; all eyes are still ahead; all energies still tense for quick decisions, for

breathless conjecture" (Franklin 19). The drama rings out from his language as he tells of potentially endless accelerated change to technology and exhibition space and practices, production, and the studio system. Franklin, sounding much like Crafton, also notes his shock that despite the upheaval the overall output of the industry has not changed: "The surprising fact is that, amid the shouting and confusion, there has been maintained a steadily growing volume of production, balanced by an equal development in exhibition, and carried throughout the length and breadth of the land. The production schedules of sound pictures are beginning to keep pace, if not to vie, with those of the silent product. First- and second-run houses are rapidly installing apparatus. There is no major territory not enjoying the refreshment of the novelty. The voice of demand is heard in every state" (19). For Franklin, the formal transparency of the film text itself conceals the upheaval that marked the experience of the transition to sound, and the "refreshment of the novelty" becomes the norm, speaking to a fundamental truth about the film world. Despite such transparency (and the fact that historical change is ongoing within the cinema) a prevailing sense of radical turmoil pervades the writing of technicians, engineers and filmmakers during the period.

When Bordwell, O'Brien, and Crafton argue that film workers merely adjusted their work schemes, they fail to properly consider how the transitional period ended the careers of both individual practitioners and categories of film workers even the overall Hollywood studio system continued. While Bordwell and other scholars do make a compelling argument over a lack of change, they are also overlooking the fundamental shift in the spheres of creativity and control during this transition. Practitioner discourse of this transition to sound reveals the fundamental shift in this era that is reflected in the production stories of chaos during the period: emergent post-production practices altered filmmaking by shifting the practices and responsibilities of those involved in a film's creation. This is the unheralded yet revolutionary transition in this era, one marked by striking unrest, opportunity, and excitement. By failing to appreciate the potent process-oriented nature of this transition, Crafton, O'Brien, and Bazin miss the opportunity to address how the long-running relationship of sound and picture underwent a fundamental shift once it entered the analog post-production system established in this era. Significantly, this shift redefined filmic creation as post became the final and standardizing creative force in moviemaking. The fact that the transition appeared to be so seamless for film historians who focus on film form and aesthetics is a sign of the remarkable and emerging power of analog post-production in restoring transparency and the outcome of the adaptive prowess of practitioners. To deny that this transition was indeed a revolution is to ignore the plight of those people and professions as well as the process that creates the art we purport to study. As I consider the experiences, thoughts, and philosophies of practitioners in this dissertation, I would be remiss not to explore their fears.

Transitions in Post-production — A Case Study: The Vanishing Fiddler

It may be tempting to gloss over the impact during a few years of turbulence in the industry, but those who made their living in the field acutely felt such change. Some of the most detailed and emotional tales emerging during the transition give expressions to intense angst and suffering as those in the industry attempted to

integrate new practices and techniques into already-established modes of production and exhibition. Wolfe notes that film underwent a series of steps in the introduction of sound into theatre. Vitaphone shorts featured the dual use of new technology — "the recording of musical and vocal short subjects as a replacement for prologues, and the recording of a post-synchronized score as a replacement for orchestras" (Wolfe 67). Thus, sound was introduced in theatres, including remote ones without existing orchestras: "Concurrently, Vitaphone shorts paved the way for the distribution of orchestral overtures and vaudeville acts to small towns and rural areas cut off from the urban based network of live variety entertainment" (62). Musician Maurice Mermey, however, portrays a much more dire portrait of the introduction of sound film, passionately writing in his 1929 piece provocatively titled "The Vanishing Fiddler":

> The past music season was a disastrous one for the union men. It is reliably estimated that perhaps 40 percent of New York's 16,000 musicians were jobless during the winter; and a similar unemployment situation, though not quite so acute, prevailed in the other large cities. The underlying causes of the situation in New York were the talkies, the failure of musical comedies to register with the public, and the closing of many small dance halls. The situation next season could hardly be worse in the music center of the world. Elsewhere, however, unemployment will be even more common as the sound films gain a stronger foothold. Even the American Federation of Musicians sees a "bad situation" in the small towns as a direct result of the talkies. (Mermey 307)

Mermey saw musicians in imminent danger of being replaced with the introduction of "talkies" and by the sound from a machine: "According to the present view of the situation, men will be supplanted by machines in virtually every house in the country now employing musicians" (Mermey 303). For Mermey, live performers would disappear like the telegraph operator had, another in a series of professions ended by shifts in technology: "I see a parallel in the cases of the telegrapher and the fiddler. A few years ago every word of a telegraph was sent by the man at the key and received by a man at an instrument. Today practically all news is dispatched by automatic printers and received by automatic printers. One man is needed at the sending end, but the words which flow from his electric typewriter are received simultaneously in as many as twenty newspapers by means of the machine. Where formerly a press association bureau might have a dozen telegraphers, now it has only one or two" (Mermey 307). Mermey writes that "many thousands" of musicians' careers ended as they "have had to go into other fields, pushed out by the speedy, efficient, economically sound printer" (307). He then quotes from a letter passed to every musician's local of the American Federation of Musicians from the national organization in a call for action to stop the loss of live performers, compared to a sexual assault: "Help in any way you can to arouse public consciousness of the threatened rape of the musical art" (306).

While acknowledging the potential devastation to musicians, Franklin in his 1929 book *Sound Motion Pictures* has a different perspective on the ultimate outcome of the transitional to sync sound. For him, the arrival of recorded

synchronized sound presented an opportunity for those workers in the film industry regardless of their mass professional dislocation:

> Although it is true that mechanical inventiveness in the beginning results in hardship to those who are affected, the outcome in the long run is for the general betterment. When employment of instrumentalists in theatres is curtailed because of the new condition, those who are left without posts seek new avenues for their talents and adapt themselves to the new condition. Approximately one sixth of the musicians in this country have applied their talents to the theatre. These include theatres of every description, and, of course, musicians are not disturbed in what is known as deluxe presentation theatres, vaudeville, or legitimate theatres showing musical comedies or operettas. There are greater opportunities for capable musicians than ever before because of the improvement essential in radio broadcasting. Already music for sound has been of great benefit to talented musicians. They have located themselves in the production centres, where musical scores are made; and it is a matter of record that they receive large salaries and are employed steadily. (Franklin 291)

Franklin anticipates a shift in post-production sound, where the act of creation and aesthetics move from immediacy at the site of exhibition to the manufactured synthesis in the recording story and editing room. He notes that the vast majority of musicians who have "employment in theatres" will lose their positions, but there are other and better opportunities in studio recording and radio for those who can "adapt" their talents. The "capable" musicians will better their position in this new system, one with "great benefit" as seen in "large salaries" and steady employment. In this respect, his optimism follows his tendency to refer to film's development as a process of evolution: "When it was found that the motion picture was capable of greater expression the public demand and the vision of progressive forces commanded the development of the films, until they constituted the most popular diversion of the whole world. This evolution trained for the industry a talented group of directors, players, writers, and studio technicians" (Franklin 228). He believes that this turmoil, where five of six musicians will lose their job, is ultimately for the general betterment and for "talented musicians" (291). According to this Darwinian metaphor for film work, many of the musician life forms becomes displaced by technological and aesthetic change and will perish, leaving a subset — those who perform in the new scheme — to thrive in the transformed ecosystem, to the benefit of the film industry. In this evolutionary schema, the overall industry advances as it adapts to fundamental shifts such as the transition to sync sound while certain individuals and professions are ruthlessly eliminated from it.

Transitions in Post-Production — A Case Study: The Disappearing Title Card

For practitioners, the transition in post-production was a more complex matter of substituting one filmmaking creative tool for another, as these shifts could include movement of aesthetic control from production to post-production and vice versa. One such multi-faceted shift was in the case of title cards. For Frank Woods (Academy secretary), recorded dialogue ("talk by audible speech") served to replace

title cards ("printed subtitles") (629). In his Academy of Motion Picture Arts and Sciences' 1928 address to the SMPE, "The Sound Motion Picture Situation in Hollywood," Woods similarly spoke of the oncoming turmoil during the transition to the sync sound: "Only one point seems fairly well settled and that is in the words of William de Mille, the talking picture of the future will follow the general line of treatment heretofore developed by the silent drama. They will be motion pictures in which the characters will talk by audible speech instead of printed subtitles. The talking scenes will require different handling, but the general construction of the story will be much the same" (Woods 629). When considered with post-production in mind, this replacement becomes more complex, as audio created in production and edited in post-production replaces cards created in post-production meant to represent the dialogue that otherwise would have been recorded in production.

Filmmakers long viewed their filmmaking techniques as potentially interchangeable. For example, in his 1921 book, *The Film Industry,* Davidson Boughey writes that close-ups were in actuality a replacement for title cards. Thus, for Boughey, footage filmed in production (or created in post-production) and then edited during post-production into the film replaces cards typically created in post-production: "The 'close-up,' as its name implies, is the enlarging of one small but important portion of an animated picture at the expense of the background, or, in simpler vein, the focusing of the camera so that a face or object is made to appear, when thrown on to the screen, quite close-up to the audience. In this way the beauty and innocence of the heroine, the cunning expression of the villain, the determined features of a leader of men, are *emphasized* without words or literary signs" (Boughey 67-8). Similarly, Hugo Münsterberg[2] wrote in his 1916 book *The Photoplay*:

> The scheme of the close-up was introduced into the technique of the film play rather late, but it has quickly gained a secure position. The more elaborate the production, the more frequent and the more skillful the use of this new and artistic means. The melodrama can hardly be played without it, unless a most inartistic use of printed words is made. The close-up has to furnish the explanations. If a little locket is hung on the neck of the stolen or exchanged infant, it is not necessary to tell us in words that everything will hinge on this locket twenty years later when the girl is grown up. (Münsterberg 88)

Thus, to Münsterberg, the expressivity of a close-up replaces the title card, an aesthetically less appealing option. Once again, a creative act in production (filming of the close-up) and its editing into film (post-production) substituted for what otherwise would be done with title cards (early post-production).

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[2] With his work as an assistant editor on *Paramount Pictographs,* Münsterberg could qualify as a practitioner. See *Motography,* May 27, 1916, pg. 1215, for a report of him speaking at a Paramount reception about his work for them: "I have managed my mental tests in the Pictograph so that motion picture audiences may learn what characteristics equip one for special kinds of work, so that each individual may find his proper setting."

Early practitioners considered title cards themselves to be a potentially complex representation of sound. James Lastra writes on the issues title cards pose as a source of dialogue: “The primary intratextual way of representing sound, the intertitle, raised problems of sound's visible origins differently. An intertitle is affected neither by the space of production nor by the space of reproduction” (Lastra 147). Though Lastra does not explicitly state it, he seems to locate the origins of the intertitle in post-production. He claims that “as a form of writing, intertitles introduce another series of dilemmas. Primary among these is their relative separation from their sources” (Lastra 147). As a result of this separation, Doane argues in “The Voice of the Cinema” that the intertitle creates a sense of the “uncanny” for the spectator: “The uncanny effect of the silent film in the era of sound is in part linked to the separation, by means of intertitles, of an actor's speech from the image of his/her body” (Doane 33-50). Lastra adds to the point, writing that intertitles introduced complexity in their form to increase their lingual ability: “In a similar fashion, changes in typeface, use of italics, quotation marks, exclamation points, and/or deviant syntax (all of which appear, for example, in Wings [1927] or Old San Francisco [1927], to name just two), as well as the bracketing of intertitles by shots of the same pair of moving lips, served to assign a source to an utterance and to make it as expressive of the character's emotional state as possible. In each case, the characteristics that mark the utterances as unique are indicated by making them visible, or more exactly, legible, and repeatable” (Lastra 147). Film engineer Arthur Edwin Krows of Electrical Research Product wrote in 1930 that hearable audio merely augmented an already existing sense of voice: “Strictly speaking, the strange new element [of the era] is sound and not speech. Speech has been joined with motion pictures since their infancy in the shape of the printed ‘titles’ — or ‘legends’ or ‘captions’ — upon the screen; and in the artistic sense speech of that sort is not much more second-hand than that which is directly spoken” (Krows 428). For Krows, speech was merely an added tool of artistry to already existing silent film sound aesthetics: “The voice that is now brought to the heretofore silent screen is not in itself a new expression, but a new aid to expression... The films of the future will not be any more original in essential thought because of the super-addition of voice than bygone silent pictures; but because of voice their expression will be more flexible” (Krows 427). According to Krows, the superiority of sound is not realism but flexibility — the inflection enabled by the voice is a subtler tool than the typographic interventions offered by title cards.

Krows, however, believes title cards themselves often had a distinctive audible quality nearly equal to audible speech (“not much more second-hand”) as they could create a sense of sound in the spectator’s mind, an artistry title card writers developed: “And yet pure sound is not altogether new to the makers of titles. For many years they have been underscoring words for emphasis, or having the words appear successively upon the screen in imitation of staccato utterance, or having speeches run in criss-cross to approximate the chatter of gossips, or having significant words like 'War' and 'Murder' and 'Help!' grow from nothing till they fill the field, or having the cry 'Police!' or 'Fire!' in quivering letters, or having dialects suggested with occasional misspellings” (Krows 427). Krows found creativity in the intricate graphic possibilities the title card writers could exploit: the card’s style,

how long they appeared on the screen, if they proceeded or followed the action, etc. For art director James Mitchell Leison, as he wrote in 1928, such artistic choices were his last duty on a production (Leison 76). Engineer Allison wrote in 1918 that titles might already be going too far with their artistry, as he cautioned restraint in their creation: "Some producers have enhanced the attractiveness of their films by the artistry of their titles, which are a most welcome improvement over the former stereotyped, white-lettered titles, which were not only distracting but very hard on the eyes of the audience. Titles should be modulated in their tones, and be diagramed on to the screen, not shot on, as this results in shock" (Allison 14). As a sign of the developing aesthetic of title cards, Krows also reports conflicts over credit for their design elements: "One writer, Roy Summerville, boasted occasionally that he was the first to use the three dots of elision to suggest the continuance of conversation not actually given on the screen… and if Roy Summerville should go down to fame for three asterisks, the present writer may claim the innovation of no periods at ends of titles" (Krows 432). To early practitioners, title cards were so identified with audible sound that veterans of the silent film era often called dialogue "titles," as early film sound recordist (and later director) Edward Bernds reports: "Erle Kenton, director of my first Columbia film, was typical of the veteran directors who made the transition from silent to sound film. Kenton had a silent-film history that went back to early Mack Sennett days. Like many silent-film veterans, Kenton referred to lines of dialogue as 'titles.' To them, the spoken words were merely substitutes for the printed titles shown on the screen..." (Bernds 116). Titles may have reached their practical and aesthetic nadir during the transition to sync sound. Krows writes that by the birth of the sound film era, one third of a film was comprised of titles, and in 1929, the first Academy Awards featured an award for writing titles.[3] Rapidly, however, post-production used editing with the use of close-ups and the creation of the soundtrack to eliminate most of their use. The first Academy Award for writing titles would be the last, as that form of film artistry largely vanished, another victim of the arrival of analog post-production. These title cards were artistic and not merely technical, as these discussions and arguments over title card content reveal. In short order, the arrival of analog post-production would largely end their place in film presentation by transferring their content to actual audio and move their creation from only the lab to also the set.

Silent Film — Complex Sound

During the silent film era, artisans both conceived of and sought to create complex sound. I define complex sound as audio that contains elements of music, effects, and dialogue. As seen earlier in this chapter, title cards, a product of post-production, attempted nuance with dialogue, but with the shift in post-production schemes, dialogue creation moved to both production (with recording) and post-production (with manipulation and re-recording). Title cards were of course not the only area where early practitioners attempted to create complex sound — the musicians of the theatre was a major source, as this section will explore.

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[3] AMPAS has a database of all awards and nominees.
http://www.oscars.org/awards/index.html

I argue that sound creation and synchronization in the American studio system typically results from the post-production process, whether it be the silent-era or analog process. In the silent-era, sound from the venue emerged from complex and at times conflicting interactions between a variety of film workers, each often claiming their own aesthetic mandate for intervention in decidedly non-standardized exhibition. With analog post-production, the means of creating entirely changed, often in a process dependent on the obtaining and manipulating sound elements. For both systems, the dominant aesthetic goal remains constant — complex audio for both realism and impact by immersing the audience. In one sign of this continuity of purpose, the categories of sound — dialogue, music, and effects — began in the silent era and continue to be used to this day, after one scheme of post-production replaced another.[4] As this system will explore, fundamental concepts of film sound developed in this era, but the location and method of its creation drastically changed after the transition to the analog process of post.

The Components of Complex Sound in the Silent Era

As mentioned above, the desire for complex sound predates its creation in soundtrack form. Speaking at a 1921 SMPE conference, Hubbard spoke of films' future with sound, breaking the areas of audio into three familiar categories: "All the master sounds — music, speech, and noises incidental to the story may be produced in the acoustic laboratory of the theatre adjoining the projection room, and be delivered automatically in synchronism by direct connection with the film movement" (Hubbard 164, "Motion Pictures"). Hubbard gave specific examples for his categories of the future, suggestions that would perfectly fit the later scheme of soundtrack creation: "I look to see a phenomenal rise in the art of incidental sounds, including music, the human voice, and those characteristic noises like the clatter of hoofs, chug of the motor, patter of rain, sighing of the wind, crackling of the fire, and the splash and roar of the sea" (163). Writing in 1921, Hubbard foresaw the future of film audio with complex sound — here with examples of music, dialogue (the human voice), and effects (rain, wind, water, and fire).

Silent film presenters, however, already attempted this same result with their own early post-production process. Historian William Johnson writes of silent-era exhibition: "In addition to the standard accompaniment of live music, there were experiments with adding sound effects and even live dialogue"(Johnson 2). In "Silence of Silents," Altman writes that in early film spectators noted in 1908 articles that live musicians were already producing a rich array of effects and music: "Yet the musical techniques that the article proceeds to extol are those that produce the sounds of thunder, horse racing, crashes, bird imitations, fire scenes, automobiles, water scenes, and pig grunts, not to mention LeRoy Carleton's wave effects, rapid-fire rifle shots, battleship guns, bugle calls, and multiple voices. Throughout 1908 we hear the same refrain; in article after article, musicians are mentioned as producers

[4] In another example, an M&E track — standing for combined *music and effects* — is a standard delivery requirement for film distributors. For one reason, the M&E is critical to the creation of foreign language versions by substituting a new dialogue track for the old one and maintaining a full soundtrack.

of effects, and music is reduced to diegetic " (Altman 699).[5] Here, Altman notes striking examples of complex sound (here effects and music) during a presentation in film's infancy. Similarly, New York University professor and orchestra conductor Orville Mayhood wrote in a 1916 issue of *Motography* about the powerful opportunity D.W. Griffith provided him with *Birth of a Nation* (1915) for creating complex audio with his musical accompaniment: "Perhaps few, if any, other pictures will ever contain the dramatic and musical coup Mr. Griffith achieved when he, by a real stroke of genius, introduced that crashing minor third — shrilled by the concealed trumpet, the weird, half-mournful, wholly terrible signal call of the Vigilantes of the south — the Ku-Klux Klan" (Mayhood 306). Mayhood describes how an instrument in the live orchestra plays for one in the diegetic world, creating a memorable moment by their combined artistry: "The ghastly cry of that brazen voice will be remembered long after every other note in the long and effective score has been forgotten. And now that the gigantic motion picture with its equally gigantic and intricate musical setting has come to stay, let me, as a musician, pay tribute to D.W. Griffith, this man who has opened up new realms for us to conquer and has given to many musicians directly and to each and every musician indirectly, be he composer, conductor, instrumentalist, opportunities for our material and artistic betterment" (Mayhood 306). Mayhood also notes that his implementation of sound is far from standard — that he had conducted for Griffith's *Birth of a Nation* more than 600 times, and he would constantly experiment and even vary the musical performance according to which city it was being exhibited. In New York, for example, he wrote that he would subdue his orchestra to get applause at the end, whereas in Chicago, he would bring it to a crescendo to do the same.

Thus, Mayhood's work in the theatre encompasses much of what later analog post-production would strive to do — create complex sound. Mayhood manufactures synchronized sound effects, simulated dialogue, and of course music with the musicians under his authority. Mayhood, however, in a manner typifying silent film post-production, creates his audio accompaniment anew with each performance in the venue to his own aesthetic desire, marrying it to in this case Griffith's work that is locked in time and form. Though Mayhood has such control over the film's exhibition, at the same time he feels a lack of it as he cannot alter Griffith's work as he does the visuals with his other conducting work, such as those events featuring live performance on the stage: "To a conductor, accustomed to controlling flesh and blood singers and dancers with a beat of a stop of his baton, the realization of the fact that the silent shadows passing before his eyes are utterly beyond his control gives him at first a feeling of helplessness and irritation" (Mayhood 305). Even with this perceived limitation to his control, Mayhood declares his artistry served to improve that of the film's: "(A)s a rule, I believe a conductor who is 'en report' with his picture almost unceasingly can make improvement even though slight and perhaps realized only by himself at the time…. And not only must music be perfectly timed but the music must act as the absolute interpreter of the pantomime passing on the screen" (Mayhood 305). In this silent-

[5] Altman's original source: "Picture Effects," Views and Films Index, 18 Jan. 1908, 11.

era film post-production system, two entirely separated artists by time and space must have their efforts combined during exhibition.

While Mayhood may bemoan his lack of control as an artisan of the venue, DeMille as a filmmaker was similarly displeased. DeMille wrote that same year as Mayhood of his dislike of the varying audio accompanying his films — the vagaries of the art musicians such as Mayhood passionately embraced and practiced:

> For a motion picture audience to watch an exciting production accompanied by the most impossible kind of music is as ridiculous as for all opera audience to hear a prima donna sing to the music of the overture. I venture to say that fifty percent of the success of a motion picture is dependent upon the manner in which it is exhibited. The system is absolutely chaotic... It is asking too much of the public to analyze the reasons for the confusion which follows in its own minds: the orchestra starting from nowhere in particular as regards the continuity of the performance will start playing "The Tales of Hoffman" and then will play it through to its finish whether the scene of the picture are comedy, tragedy or pathos. ("Good Music Important." 464)

In this article, DeMille reveals his frustration with a lack of control over exhibition, angered over devastating the lack of standardization was to a film's presentation. DeMille claims here that the live exhibition provided for 50 percent of a film's success, a daunting percentage for a filmmaker not typically involved in that very presentation, The *Motography* article records DeMille's apparent frustration at the lack of quality as well as varying forms of music in different theatres, taking up "cudgels against the automatic organ, the boy pianist and the squeaky violin in the badly managed motion picture theatres in the United States" ("Good Music Important," 464). He also refers to his imploring a group of Paramount exchange men:

> Now you have seen our share towards making a worthy production. You have seen the results of hours of hard work, of thousands of dollars investment and the most earnest co-operation between the world's leading operatic actress and a studio, united in the purpose of making a masterful production. All the advice I have to tell you gentlemen, who are going out over the country and who are closely in touch with the exhibitors, is that you tell them to give the picture half a chance with the public and it will succeed. Tell them not to murder it with a lot of trashy music and tell them that no music at all is better than bad music. (464)

DeMille's rant reveals the difficulty of this aesthetic silent-era post-production partnership between the filmmakers and the musicians. DeMille writes that the musicians should simply not contribute to this post-process and not play a note, as music at all would be preferable to bad music for a film's presentation. He does believe that further "some uniform system of music distribution or regulation would be obtained soon" (464), though he would have to wait more than a decade for its development and widespread implementation of analog post-production and its soundtrack to substantially achieve what DeMille sought —the standardization of

post-production audio. With the arrival of analog post-production, one form of post replaces another, with technology and standardization displacing performers and variation. This shift constitutes an aesthetic transformation of exhibition and the end of both the conflict and the potentially troublesome collaboration the described above that occurred in the silent-era post system. Analog post-production eliminates the artistry claimed and expressed by individuals such as Mayhood — such individuals of the venue lose aesthetic authority to a scheme. If we accept DeMille's view that music is half of a film's impact, then the authority over 50 percent of exhibition moved entirely to the post-production process with this transition. Silent film post-production featured a struggle for aesthetic control, but the introduction of analog post-production effectively ended the discussion by removing a major source of artistic intervention. Music, of course, was far from the only destabilizing element to silent-era exhibition, as this next section will explore.

Another Form of Silent Film Post-Production — the Projectionist

As written in my introduction, projectionists proved to be a major factor in exhibition destandardization during the silent era. This profession attempted to claim an artistic role in this intervention, one not dissimilar to the role Mayhood claims for musicians. Much like live musical accompaniment and title cards, projection practices functioned as a form of post-production as projectionists attempted to express artistry and enhance filmic impact by varying the projection speed of entire films, scenes, and even moments during exhibition. More often, speeding was linked to the variety programming that prevailed in the 1920s, which included live vocal performances, live musical performances (called prologues), comedy shorts, and a feature film.

A projectionist might vary the speed of picture projection from show to show or even within individual screenings due to artistry, mood, poor skill, or to increase profits, — a faster screening speed meant more possible showings (Richardson 320, 1910). Robert Townsend, the lead projection engineer for the Eastman Theatre, wrote in 1926 that at times he received too much footage to be screened within the schedule: "My greatest problem today is to be able to run a thousand foot weekly, a two-thousand-foot comedy, and an eight-thousand foot feature on a two-hour schedule which includes also an eight or ten-minute overture and a five or ten-minute act. This cannot be done without speeding. We have found at the Eastman Theatre that at least the above amount of variety is necessary to make a well-rounded program. What do we do? Instead of using eighty feet per minute as a standard projection speed, we project at from ninety to one hundred feet per minute" (Townsend 81-2). The demands of his programming necessitated screening the film at a fast rate, a practice referred to as "overspeeding." Richard Rowland, president of First National Pictures, an association of independent theatre owners, reported showing "comedies of fast action" at 90 to 95 feet per minute, while "slow-moving drama is figured to be at 80 to 85" to a film engineer's conference. F. H. Richardson, a leading and certainly most prolific writer on projectionist practice during the early film period, wrote and frequently revised the copious *Handbook of*

Projection: The Blue Book of Projection.[6] In his 1922 edition, he would stridently contest the practice of overspeeding an entire film, which he called "an outrage on the public; an outrage on the producer; an outrage on the projector manufacturer; an outrage on the film exchange and an outrage on the projectionist himself. There is and can be no excuse for it absolutely none whatever" (Richardson 218, 1922).[7] For Franklin, the aesthetic danger to a film's exhibition is clear and dire — the improper alteration of projection speed could destroy a moment carefully crafted and intended by the director: "Instead of the daughter giving her dying mother a fond embrace and a loving kiss, she is made literally to grab the mother, yank her head up, dab their lips together and scuttle away as though it were a deuced nuisance and she was glad it was over with. The whole effect the director has striven so hard to attain is entirely and utterly ruined" (Richardson 120, 1924). [8] To avoid this, Richardson painstakingly attempted to create a proper guide for projectionist artistry in his lengthy series of guides, another revealing sign of the seriousness with which he took his craft.

Richardson believed the freedom of altering projection speed was an aesthetic opportunity to enhance a presentation, one that should be a seized by a proper artisan. He passionately argues that such projection artistry could enhance any exhibition, as he states in his 1910 handbook:

> It lies in the power of the operator to govern absolutely the speed of all moving things on the screen. He cannot change the actor's gesture, or movement, but he can vastly alter its speed, merely by altering the speed of his machine. The actor may, in fact, bring his fist down on a table as a clincher to an argument, slowly. Run at ordinary speed the fist would come down exactly as the actor's fist did come down. But the actor may have misjudged the action and the operator has it in his power to bring that fist down at the speed to look best and correspond best with the other movements of the subject at that point. He can bring it down with apparently table splitting force or he

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[6] His handbooks on projection went through eight revised editions (1910, 1912, 1916, 1922, 1927, 1935, 1942, and 1953.

[7] He made this point frequently in his writing, once direly penning in mostly caps: "All this leads up to the fact that FALTURE TO ADOPT SOME ADEQUATE MEANS FOR SECURING THE SYNCRONIZATION OF CAMERA AND PROECTION SPEED OPERATES TO PLACE THE ENTIRE FINISHED PRODUCT OF MOTION PICTURE INDUSTRY AT THE MERCY OF THE THEATRE MANAGER AND PROJECTIONIST, INSOFAR AS HAS TO DO WITH SPEED OF ACTION OF ALL MOVING OBJECTS" (Richardson 119, 1924).

[8] Richardson reports what he overheard eavesdropping: "Former President Wilson once said, within hearing of the author: 'I have often seen myself in motion pictures, and the sight has made me very sad. I have wondered if I really do walk like an animated jumping jack, or move around with such extreme rapidity as I appear to'" (Richardson 216, 1927 Vl 1). Richardson believes Wilson did not know what caused it — "reprehensible" over-speeding.

> can slow the movement until the blow is a gentle tap. (Richardson 319, 1910)

This is yet another example of the artisans of the venue, in this case projectionist Richardson, claiming the mandate aesthetic control over a film's exhibition as part of silent-era post-production. As Mayhood the musicians found, Richardson realizes production has been completed and the film created is unalterable. Yet, the audience's reception can be altered by his post-production work. With such potential aesthetic impact, the proper embracing this aesthetic authority lifts the projectionist "out of the class of the ordinary mechanic and makes of him something of an artist. Lack of perception in this matter, or lack of attention to it, stamps the ordinary operator as ordinary, and advertises the fact to the world at large (319). Richardson argues that, by properly asserting control over speed, the projectionist became the artistic equal of the director. Thus, the projection room as part of this nascent post-production scheme becomes an aesthetic authority over a film's presentation. Richardson further argues both director and projectionist experiment both attempt to manipulate speed for the "best effect" on the audience. (Richardson 118, 1924).

To further buttress this claim of projectionist as director, Richardson invokes Griffith under the title heading REDIRECTS PHOTOPLAY: "A no less person than D.W. Griffith is credited with having made the following statement: 'The projectionist in a large measure is compelled to redirect the photoplay.'" Richardson emphatically agrees: "The statement attributed to Mr. Griffith is entirely correct, because by a change in the speed of projection the projectionist is enabled to alter the whole effect of any given scene, insofar as concerns the audience. For instance, a funeral procession projected at excessive speed becomes farcical and ridiculous. On the other hand, a race projected at a too-slow speed is absurd" (Richardson 214, 1922). Richardson makes a persuasive argument — after all, the projectionist has more control over presentation than the director as he alters the exhibition of a set art form. Thus, even in the silent film era, post-production retains a power over production and declares such aesthetic impact an artistic enhancement and indeed necessity.

As noted above, there was a living and ongoing human conflict to the various artists of theatre as past of this post-production process. Mayhood notes that the projectionist "is quite an artist too — becomes temperamental at times independent of schedule and speedometer, and gives the conductor a few more or less interesting sounds where he least expects the lightning to strike..." (Mayhood 306). Mayhood generally is complimentary toward the work but implies that the relationship between the projectionist and the conductor could be a difficult one: "[T]he operators with whom I have been associated have been good fellows in every sense of the term and have shown marked willingness to give me any and every aid toward the smooth and effective performance, the sine qua non of success." This, however, was far from always the case, and he summed the complexity and ambiguous feelings about projectionists by calling them "My friend, the enemy" (Mayhood 306). Synchronization, a major issue of early sound exhibition, becomes more troublesome with multiple artists of the venue altering their presentation.

Projectionists of the era did not only limit their assertions of control to the projection speed of the print but also extended it to its visual content of the presentation. As Townsend writes, the personnel at theatres were empowered to edit films as part of their overall efforts to manage screenings:

> We reduce the comedy to about twelve hundred feet and take out about one thousand feet from the feature. Each of these footages are approximate; bearing in mind that the whole show must not be much in excess of nine thousand feet. How do we do it — by cutting. It is no easy job. This is the way we go about it. The managing director, the musical director, and I watch the picture through at the first preview, after which we confer as to what can be eliminated. At this time I estimate just how much the film will be reduced in footage. The speed and running time are then decided. (Townsend 82)[9]

Townsend also felt compelled to act when in his view films were improperly edited — such as with close-ups of one character at the end of one reel and another at the start of the next one, making a smooth transition difficult. Projectionists, according to director Irwin Willat writing in 1928, were also known for leaving out "one or two reels and it hasn't made any difference — in fact, it helped the picture. That is unfortunate but true" (Willat 292). Thus, multiple forces at the theatres asserted authority over a film's presentation, as exhibitors created this de facto form of post by altering films to suit aesthetic desires, scheduling strategies, local tastes, etc.

I wish to consider the influence of a variety of forces in the theatres, and I would be remiss not to mention censorship, though a broad discussion of this issue is beyond the scope of this dissertation. Trevor Faulkner of Famous Players-Lasky Corp points to censorship boards as something else that damaged prints and thus what he referred to as continuity: "Let us consider *disturbed continuity*. In past years the censor boards in different states have each insisted on their own eliminations, and have often removed portions which they have failed to restore as the film passes on its journey" (Faulkner 294). [10] In this context, censorship becomes another form of post-production. In this era, *Motography* published frequent reports on how censor boards "did things that appear ludicrous — or so would appear if the results were not so serious" ("The Funny Side of Censorship." 652). One striking

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[9] Reflecting how difficult being a projectionist was, Townsend believed the profession required a special mental and physical specimen: "The projectionists who run the regular show are picked for their individual ability. We must consider that a good projectionist must be a student of mechanics, electricity, and optics at least, to say nothing of physics, chemistry, and many other branches of science which could very reasonably be called a necessary part of his education" (84). On top of all this, the proper projectionist must also have good eyesight and be without lung trouble, reflecting the exertion required to hand crank the machine.

[10] Early film practitioners had a broader use of the term continuity; for example, they referred to a treatment as a continuity. Screenwriter Carey Wilson said in a 1928 Q&A session: "The scenario and the continuity are the same, but the scenario (or continuity) and the story are not the same… These are two separate items, the story and the script." (Wilson 59)

example of censorship requested by the Kansas State Board of Review concerned *The Birth of a Nation*: "There is one from 'The Birth of a Nation' which instructs the film men to 'eliminate close-ups of Gus's face.' This is not funny — it is merely mysterious. As we remember the great spectacle, we do not recall any particular reason why Gus's face should be picked for elimination" ("The Funny Side of Censorship." 652).

This attempt for control of the print and exhibition was not entirely welcomed or acclimated, in yet another example of the clash of post-production practitioners. In the Q&A that followed a presentation at the SMPE from Townsend in favor of a projectionist mandate to edit, E.F. Denison of the Famous Players-Lasky Corp, a film exchange, challenged him and Richardson, also in attendance, directly on this: "I don't think the theatre has any right to cut pictures. The picture is properly cut in the studio and is in complete form. I do not think projectionists are qualified to re-cut a picture. We do not even attempt re-cutting in exchanges outside of lifting censored parts. We have tried to stop the cutting of our pictures the theatres. If pictures are too long or padded, the matter should be taken up promptly with the producers. Unskilled cutting of the pictures in the theatre certainly mars the story value of the picture" (Townsend 87). [11] Richardson in his reply confirms both the right and need for a projectionist to edit a film: "I can't remember the time when I have seen a production on the screen that would not be benefited by eliminating footage.... I have long said, and say again, that one of the highest functions of the able projectionist is to be able to look over the film and eliminate enough of the padding present in practically all productions to bring it down to the footage which can be put through without overspeeding" (Townsend 88). Padding refers to unnecessary footage in a film or program of movies, a clearly personal judgment. As of this 1926 clash, Richardson firmly believes in the projectionist's right to edit a film for artistry's sake and to satisfy the scheduling needs of theatre managers.

Issues of Silent-Era Post-Production

The implementation of analog post-production practices linked to the synchronization of sound would end much of a film's variability at the point of exhibition. In *The World According to Hollywood, 1918-1939,* Rush Vasey details the issues with editing film with a soundtrack after the film left the studio (Vasey 75-80). Fox's optical track offered some limited flexibility, as sequences could be snipped without ruining an entire reel. Wax disks, however, were inflexible, with any changes to that soundtrack requiring a new reel be produced to obtain synchronization. "The nature of this technology threatened to restrict the medium in a more profound sense than the limitation of camera mobility that is often cited as a major effect on the sound revolution" (76), With the implementation of analog post-

[11] In 1919, Denison also concluded that poor editing work at the exchanges also was a major problem: "I soon discovered that at least 75% of our damage was due to improper handling and splicing of film in exchanges, caused by ignorance on the part of inspectors, improper equipment and methods. Practically everyone of the exchanges had their own method for making splices, and each individual inspector had her own pet way of making a splice" (Denison 179 "Sprockets")

production, films could have a fixed synchronization of sound and visual elements. In addition, sound film was far more difficult to edit at the venue and could cause sync or distortion issues. Also, changes in speed to a sound film are far more recognizable, making speed adjustments impossible. With these changes, projectionists lost much of their artistic freedom.[12] By the 1930 edition of his projectionist handbook, Richardson no longer encourages managers and projectionists to edit prints or finesse the speed of projection due to the need for a standard projection speed for sound film — a near constant that reflected recording speed:

> It is essential to perfect reproduction of sound that the projector be driven at precisely the same speed that the taking mechanism was driven. Any variation as between the speed of taking and the speed of reproduction automatically results in altering the sound reproduction, which then is not a duplication of the original sound. Any difference as between recording and reproduction speed sets up or produces distortion of the sound, which will be particularly noticeable in either music or voice. (1930, 1127-8)

Richardson also notes that any sound faults had a devastating impact on "continuity" as audiences were "much more critical. Imperfections seen only with the eye could be and were at least to a considerable extent disregarded or overlooked. They did not seriously interrupt the continuity of thought — the story" (Richardson 876, "Effect"). Gone are the long discussions of the projectionist as artist, the cutter, director, and adjuster of film speed. These once claimed rights as part the silent-era post-production scheme were no longer a matter for even discussion, as analog post-production began to be implemented.

After this transition, projectionists are less importantly artistically but more important technically — in their new responsibilities, they must more rigidly implement the work created by the filmmaker and may no longer count themselves amongst their ranks, their aesthetic input now eliminated by standardize projection speeds. The projectionist work must be precise or else the entire exhibition fails, as Richardson writes in his 1930 handbook: "Without a synchronized sound accompaniment, projection faults, while in themselves harmful and bad, did not and do not seriously interrupt the continuity of thought in following the story. In fact, the mind might well be so engrossed in the story that any except a very serious projection fault would pass almost entirely unnoticed. With synchronized sound added, however, the situation is altered. Faults in sound will not be passed over unnoticed" (Richardson 963-4, 1930 "Handbook"). For Richardson, the issue behind all this is the importance of sound, though not in terms of its power but rather the dangers of its technical failure. Similarly, for Franklin, the projectionists of the sync sound era serve the art of others rather than their own: "The advent of sound motion pictures in the theatre has elevated the projectionist to a position of greater importance by making him a supervisor of maintenance" (Franklin 76). With the soundtrack film, the projectionist tends more to the standardized running of projector than to impacting the film itself. Franklin believes once this era began —

[12] Censors, however, continued to ask for cuts that did affect continuity.

“more than a mere mechanic — he should be a student of his new art… The projectionist should have an understanding of the principles of amplification and familiarize himself, not only with operation, but with the underlying laws upon which it depends. He should know what part each unit plays in producing a competent result” (Franklin 63). Richardson writes that this new technical work actually requires “a very great deal more painstaking care, a much higher grade of work and much more of expert knowledge is demanded and required from the sound-picture projectionist than from the one who projects silent pictures only” (Richardson 963-4, 1930 "Handbook"). For Richardson, the new sync sound era required “far more careful work in production” (965) from the projectionist. While some might seem now to dismiss their role, to Richardson the precision required to succeed in sound projection actually made their work more important but so very different.

By his 1930 edition, Franklin neither calls projectionists artists, nor discusses overspeeding (now rejected), nor refers to theatre personal editing films for their content; instead, he explains how a projectionist can cut in order to carry out straightforward repairs to a damaged print. Spectator immersion now demands the projectionist’s compliance with the filmmakers, as this once self-declared artist has becomes a true technician in the service of others’ work. This shift to the soundtrack gave considerable authority over a film’s presentation to those filmmakers, as Harold Franklin noted in his 1929 book *Sound Motion Pictures*: “Now, for the first time, the producer is able to control the sound that accompanies the presentation and is free of the fear that his product may be exhibited to the weird ‘music’ of some local performer” (Franklin 228). De-facto post-production in the silent era had entirely different artistic processes for the visual and sound — the artists of the set interacted with those of the venue. With the arrival of the analog post-production era, both would fall under the auspices of its process, eliminating most of the venue’s influence.

In this book *Audio-Vision,* Chion writes that the shift to sound film forced the standardization of projection speed, making the creation of film into a true "chronographic" medium — an art form written in time as well as in movement. With the advent of the recorded and synchronized soundtrack, the resulting audio distortion in projection speed was too apparent for projection speed to vary. Chion argues: “One important historical point has tended to remain hidden; we are indebted to synchronous sound for having cinema made an art of time. The stabilization of projection speed, made necessary by the coming of sound, did have consequences that far surpassed what anyone could have foreseen. Filmic time was no longer a flexible value, more or less transposable depending on the rhythm of projection. Time henceforth had a fixed value — sound cinema guaranteed that whatever lasted x seconds in the editing would still have this same exact duration in the screening” (Chion 16-17). Chion argues that this was a central difference between silent and sync sound cinema: “In the silent cinema a shot had no exact duration; leaves quivering in the wind and the ripples on the surface of the water had no absolute or fixed temporality. Each exhibitor had a certain margin of freedom in setting the rhythm of projection speed. Nor is it any accident that the motorized editing table, with its standardized film speed, did not appear until the

sound era" (Chion 17). I wish to place Chion's argument within this fundamental shift of post-production schemes.

Writing in the 1938 *Motion Picture Sound Engineering* from AMPAS, sound engineer Wesley Miller argued that sync sound shifted the sense of time not only in exhibition but also during the creation of the film. Sound could be recorded during any time period and then introduced into the soundtrack, a fundamental freedom of analog post-production:

> The recording medium introduces a new element — time. The reproduced sound may no longer be traced directly to its source in point of time. Any period may elapse between the original inception and the final reproduction. The identification of source becomes a voluntary effort, and a multitude of questions arise to perplex us in the technique of the reproduction system. The motion picture craftsman desires to create in his product an illusion, which plays upon the imagination of his audience to make them forget these artificial factors. By the many artifices at his command he may often transport them from their own sphere to the entirely new surroundings, which he provides for them at the screen. (Miller 1)

Now, audio may be recorded at a very different time but still be synced to the visual, breaking, as Belton argues, the indexical link of presentation and recording. Post-production's aesthetic is not about the now but the simulation of it. Analog post-production loses the freedom of the moment — the element of live interaction — both Richardson and Mayhood proclaim. With this transition in post, filmmaking may change little but film exhibition fundamentally does. While Bordwell and other scholars make a compelling argument over a lack of change, they overlook the fundamental shift in a film's presentation and its creative control. By fully considering post-production and its role in exhibition, silent and soundtrack film becomes arguably fundamentally different art forms — analog post-production standardizes sound and eliminates the artistic intervention of numerous artists as seen in the silent-era. In doing so, analog post consumes the considerable aesthetic role the venue played in presentation during the silent era, most specifically with its use of the soundtrack. In the new aesthetic of analog post, an increasing array of specialists participated in the soundtrack's creation, activity disguised by the audience both physically and from post's embrace of the aesthetic of invisibility. The artistic process of analog post was not one dominated by a singular, though malleable, live presentation. Rather it was a fairly standardized one that resulted from potentially endless experimentation with various sound elements. As such specialties were refined and filmmakers explored their new audio domain during this transitional time, this era was rife with experimentation and technological innovation. This transition of post-production systems, however, was far from seamless. There was, for example, the controversial figure of the Monitor Man, an attempt by production to create complex sound and deny post-production its dominant role in film aesthetic during this vibrant transitional figure.

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Chapter Three: Transitions in Post-production — The Rise and Fall of the Monitor Man

If we consider the marrying of the audio and the visual as the critical act of post-production, then I would argue that silent-era film had its own nascent form of the process — one whereby the image created by the set and the lab was paired with the production of live sound at the time of exhibition. In this scheme, a films' presentation varied with each performance due to the intervention — artistic and otherwise — of a variety of film workers, including musicians, projectionists, theater managers, and censors. The subsequent introduction of sync sound led to the codification of the analog post-production process, one where film workers prepared a standardized audio accompaniment to the visuals. This new system of post also limited intervention from various forces at the time of exhibition. With this transition in post-production, one form of the post process (the addition of live sound to the film) replaces another (the unification of the recorded sound track with the image track prior to exhibition) with resulting technological and aesthetic changes. Technology and standardization displaces performers and the variation resulting from such figures as projectionists and musicians as discussed in prior chapters. At the level of post (and, for that matter, reception), this shift primarily constitutes a transformation in exhibition practices.

The analog post-production process has a different process of filmic creation than its silent counterpart. The silent-era's post process results from the live performance of musicians, projectionists, and others. In their intervention, these workers and artists generally operated independently of each other and generally of those who created the image track. In contrast, the analog post system potentially allowed filmmakers to create a standardized marriage of sound and visuals within a single aesthetic scheme under their control alone. The analog system scheme features not live performance of individuals functioning with the sphere of exhibition but rather a process that created a distinct and standardized art form. In analog post, editors working after filmmakers may continue to obtain, manipulate, and then combine audio elements over a period of time before marrying it to the visuals, thereby denying exhibitors their intervention at the time of projection. Understood in this way, this transition in post systems enacted a fundamental shift in aesthetic authority and process. As Bordwell and Crafton argue the initial disequilibrium caused by the shift to recorded synchronous sound and the introduction of analog post quickly returned to a state of recognizable equilibrium, as new technologies and post-production practices were developed and put into place. Though some scholars dismiss the idea that any revolution occurred with respect to filmmaking during this time, I argue that this new equilibrium provided artists and technicians involved in post-production a new authority over the aesthetics of the motion picture art. Analog post-production represents a new style and temporality of creation, one performed by distinct practitioners at different times.

This chapter will examine one authority figure that emerged during the transition to synchronous sound: the "Monitor Man." The rise and rapid fall of the

Monitor Man (and at times Mixer Man) in the Hollywood studio system during the transition to sync sound provides a striking example of how the shift to synchronous sound changed production and post-production practices. In a feature on the Monitor Man ("Inside the Monitor Room") in a 1930 *Photoplay*, Elaine Ogden writes of this new sound technician: "They call him God around the studios and a god indeed he is, since he controls the destinies of the famous ones of filmdom. All the strange and beautiful favorites who delight you are in his power. He is the *Jove* of Hollywood, the *Wotan* of the screen world. He sits high above the stars and looks down upon them" (Ogden 76). This sound engineer emerged in the late 1920s, and embraced the philosophy that he could, if he so desired, perform a "live mix" of complex audio during production by placing microphones near various sources of dialogue, music, and effects. The audio recorded in this fashion potentially featured complex sound in perfect sync with the filmed image, thus replacing the complex audio created in the theaters during the silent era. Furthermore, this audio could potentially achieve greater realism than its predecessor's, as, for example, the dialogue could be the actual voices of the performers in the image (as opposed to title cards) and the sound could result from the actual sources and actions seen onscreen. In pursuit of this audio, Monitor Man grew quite ambitious in his technique — one technician of the era describing using as many as six microphones (and thus six sources of audio) during a single take (MacKenzie 742). In addition, the Monitor Man could manipulate audio levels of various sources during filming, allowing him further control over the recorded sound.

Now, however, he is an almost entirely forgotten figure, relegated to 80-year-old technical journals and a few brief footnotes in academic articles and books. I argue, however, that he is a telling transitional figure who bridged the silent-era and analog post systems, in Hollywood's ongoing attempt to continue to create complex sound. As discussed in previous chapters, complex sound is audio that potentially combines dialogue, music, and effects, and I argued that filmmakers pursued such sound in both the silent and sound eras in different post schemes. The vast authority granted the Monitor Man during his reign in the transitional period reveals the importance practitioners placed on obtaining complex sound in the sync sound era. He is a figure of synthesis and singularity amongst a plurality of new technologies. The problem of defining and discussing his role is a sign of the liminality of the Monitor Man. He ultimately lost his struggle to mandate his aesthetic scheme because the analog post-production process that ultimately displaced him offered far greater flexibility and control in the same aesthetic goal — creating a complex synchronized and standardized soundtrack. In the true analog post-production system that came after him, audio can be far more freely manipulated in a potentially endless process as its married to the visuals. The Monitor Man's captured audio could not be easily altered after recording, and this lack of flexibility doomed him. Under this scheme, practitioners procure sound from a variety of sources — production, ADR sessions, music sessions, Foley work, effect libraries etc — for use in post-production as the final product becomes potentially more divorced from the recorded event.

The Aesthetic Audio Goals of Film Practitioners — Complex Sound

Though post-production practices changed as a result of the transition to sync sound, the overriding formal and aesthetic goals of filmmakers remained consistent. Practitioners in both the sound and silent era, often sought to cultivate complex sound for use as a tool for artistic impact. As I argued in the last chapter, silent film practitioners conceived of, sought, and achieved the illusion of audible dialogue in their nascent form of post through such techniques as title cards and mouthed words. In addition, in the theaters, musicians could freely combine a variety of audio types, including music, simulated sound effects, and even dialogue, in their live accompaniments to the film at the time of exhibition. As I will discuss in this chapter, practitioners during and after this transition to sync sound era sought to maintain and enhance their ability to create complex sound. While recorded sound greater opportunity for this — actual spoken word as opposed to title cards, for example — the technology of era at first greatly limited them in their ability to actuality accomplish this. For one, quality issues limited filmmakers' ability to manipulate audio after recording during the 1928-31 transitional period, and thus filmmakers were limited to the audio recorded during production. In his book, *Film Style and Technology: History and Analysis,* Barry Salt writes that rerecording techniques — a mainstay of the analog post-production system — were rare in this transitional era due to technical issues: "The mixing of a set of film sound tracks subsequent to their initial recording to give a final combined re-recording was avoided if all possible during the first years of the [1930s] decade, as the extra recording stage onto sound film produced a just perceptible loss in quality" (Salt 233). Given these restrictions in combining different elements of audio in post, practitioners desperately sought alternative ways to manufacture aesthetically pleasing, often complex sound. One technique was to record one form of audio, often music, in a proper environment to ensue quality. Subsequently, the filmmakers would play this track back during production and then potentially record another source of audio, such as dialogue, as Rick Altman notes in "The Evolution of Film Style" (46). By doing so, filmmakers could create a single recording with two of the three elements of complex (or layered) sound that would be synchronized to the filmed visuals. Even so, technical issues with such recordings remained with this technique. Altman notes that "until approximately 1933 it was extremely rare for music and dialogue to appear simultaneously on the sound track unless they were recorded simultaneously" due to conflicting needs for reverberation (46). Given such limitations, the early analog post era was actually less able to produce complex sound than its silent-era predecessor.

In pursuit of complex sound during this transitional time, the Monitor Man his multi microphone recording technique to avoid the issue Altman and Salt refer to above. Conceptually, the Monitor Man's procedure of obtaining sound resembles that of the mix, a mainstay of analog post-production, but he captures his audio during the moment of production as opposed to creating in through manipulation of elements in post-production. In *Film Style and Technology*, Salt refers to this multi-microphone recording technique as a mix: "If several microphones were being used to record sound for a shot, their signals were mixed directly before being recorded photographically on the sound negative in the sound camera" (Salt 233). As they

pursued their craft, these Monitor Men sought a self-proclaimed mantle of artistry and a degree of sovereignty akin to the artistic control and autonomy claimed by silent-era projectionists and musicians as described in the last chapter. Both these Monitor Men and the silent-era's projectionists and musicians created audio from a craft practiced live. Though sound technicians during this transition went by various titles including mixer, sound man, recording engineer, and production sound mixer, the specific title of Monitor Man became indelibly lined with this ambitious practice of the on-set live mix — recording audio featuring complex sound during production. The Monitor Man proved to a figure of enormous controversy in the transitional era, entering as an authority and then inspiring tremendous and nearly hyperbolic fear and awe; in trade periodicals he was variously described as god, freak, pest, and showman in this era. Within a few years, the filmmaking community utterly rejected this technique of the live mix and even the very title "Monitor Man."

The Fatal Flaw of the Monitor Man

I argue that the critical flaw in the Monitor Man's scheme was not the goal — the creation of a complex sound featuring multiple sounds — but rather the limited nature of the version of the soundtrack he could create. Filmmakers quickly came to prefer the more flexible nature and aesthetic authority that accompanied analog post-production — this process could also create complex sound but in a scheme far more under their control. Further examination of the audio the Monitor Man created reveals the limitations of the soundtrack he was able to produce by recording sound on set. The Monitor Man recorded all audio to a single track, and as of this time, as noted above, there was little that could be done to alter this captured sound. Sound elements could not be separated out, nor could they be introduced without disrupting continuity and audience immersion. With analog post, practitioners utilizing the isolated sound elements had far more aesthetic freedom in the creation of the sound track. Specifically, they had substantial control and freedom to create a synchronized soundtrack, and the ramification of this transition continue to this day. In the analog post-production process that came to dominate the American studio system, editors sought to "break down" sound recorded from an event (for example a scene with two performers having a conversation) into smaller, isolated components. Individuals in the scene may have their sound on separate reels, and other distinct tracks would contain a variety of other audio elements including background noise, sound effects, etc. Creating such isolated audio components provides practitioners with considerable options during both the editing and ultimately the mix. Doing so did far more than make synchronization possible— levels could be adjusted for volume to give priority to one element over another (usually dialogue was prioritized). Sound effects recorded later could be mixed in, and music added long before or after production could be added with precise care. etc. By utilizing the process, the final soundtrack could have little connection with the actual recorded production sound on the set and allow near total control over a film's form by the workers in the analog post-production process. When I was the post-production supervisor for the film *Flirting With Disaster* (director David O. Russell in 1996), , we prepared at times more than 30 separate reels of sound for each one of image for use during the mix as part of the post-production process. This allowed us remarkable control to create a soundtrack in the mix — isolated

parts of audio could be independently finessed in a number of auditory ways (volume, pitch, duration, etc).

As noted earlier, the Monitor Man complex sound's was recorded from all the present sources to a single-track audio, limiting any potential manipulation after it was captured. In doing so, with proper preparation and implementation, he achieved complex sound, but his work left practitioners with little ability to alter it after the recording. In just one issue with this technique, microphones of the era were notorious for collecting unintended and undesired sounds. As Doane notes, the microphone itself and by extension its recording "is not sufficiently selective, because it does not guarantee that the ideological values accorded to sounds and their relationships will be observed in the recording, the expensive mixing apparatus which will enforce that hierarchization is standardized" (Doane, "Sound Editing and Mixing" 58). This was something practitioners at the time were well aware of. Sound engineer Miller described this issue in a manner similar to Doane's in a 1938 article: "A microphone and recording system have no such discretion. They are robots which pick up everything within their range and record it to the best of their ability. They possess no inherent means of selecting only that portion which is wanted. Emphasis is not possible to them without human guidance" (Miller 1). For Miller, such recorded audio limits artistic choices during post-production. To Doane, it renders the practice of the sound editing and mixing, culminating with the creation of the soundtrack, unable to mask any ideological fissure between sound and image, or emotion and intellection, two truths of the bourgeois ideology (56). Thus, the Monitor Man's complex sound limited control, whether it be for aesthetic or for ideological reasons.

The Monitor Man's approach to constructing the soundtrack was ultimately a failed experiment in a highly important cause, and filmmakers were prepared to allow this sound engineer to completely disrupt their practice in its pursuit. This and the passion that accompanied his rise and fall speaks to the importance film practitioners placed in their desire for complex sound, and it further makes the case for the critical nature of analog post-production's development in film history. Crafton notes that this transitional era was rife with experimentation: "[T]he films of the period are more like tests than texts" (6). Indeed, practitioners explored multiple methods of both production and post-production. In a 1928 article, "A System of Motion Pictures With Sound," recording engineer H.B. Marvin of General Electric also refers to experimentation by practitioners with regards to sync, complex sound during this time: "The usefulness of the combination of sound and picture is beginning to be felt. One application is to record action and sound of scenes in which both originate and are recorded at the same time. The sound may be speech, music, or noises which are intended to enhance the effect of realism. In this field a new technique and a new art remain to be developed and it, therefore, excites the greatest interest in experimentally minded persons" (Marvin 94). As Marvin puts it, a new form of art developed out of this new audio practice, one I argue that resulted a new aesthetic authority in the area of analog post-production. The Monitor Man was a failed attempt to create during production what this later process would so effectively do after production. The practice of analog post-production would soon come to control American studio style filmmaking. The role

played by the Monitor Man provides important insight into the halting, uneven movement towards developing and later standardizing such practices.

The Practice of the Monitor Man

This section will explore in greater depth the practice of the Monitor Man as he sought to record complex audio during production. In 1929, effects specialist Carroll Dunning wrote about the process of recording sound issuing from various sources during production in an attempt to create a realistic soundtrack: "The sound of the side-wash of the water was picked up by hanging a microphone over a water-filled box through which a workman swished a wooden paddle. A second 'mike'[1] picked up the dialogue and song while a third recorded the orchestral accompaniment of a Hawaiian orchestra, supposedly amidships of our nailed-to-the floor yacht. The composite photography was completed instantaneously and simultaneously with the recording of dialogue, song, music and sound effects. The result on the screen was startlingly realistic" (Dunning 299). With this scheme, the recorded audio creates complex sound for presentation in sync with picture — dialogue (voice and song), music (an orchestra), and effects (water). In addition, in their attempt for more aesthetically pleasing audio, practitioners took additional steps to increase their control of the recorded sound. In *The Jazz Singer*, Bernard Brown, a sound engineer on the film, sought to augment the impact of recorded dialogue by using multiple microphones to capture actors in motion. By manipulating the recording volumes from the mics, he allowed for potentially greater realism by allowing the actors to move: "We'd hang several microphones so if an actor had to move as they say, we'd turn one microphone on and off while he was within range and then turn on the next one when he moved to it. That way he could walk three or four feet (we'd have the floor marked off)" (Tibbetts and Welsh 152). During an interview, Brown also specifically speaks of mixing two types of complex audio from two microphones during filming, one on performer Al Jolson (dialogue) and the second on the orchestra (music):

> [American Classic Screen] ACS: When you recorded the sound for the ''Mammy" number, how many microphones did you use?
> BB: We had two microphones — one on the orchestra and one on Al.
> ACS: You were mixing sound, in a way, right? Were you able to adjust the gains on both microphones?
> BB: Oh, yes. I held the orchestra down so as not to override Al. Since I was also conducting the orchestra, it was easy to hold down. (Tibbetts and Welsh 153)

Thus, as a result of his attempts to control recording sources and volume levels, Brown manipulated the recording levels for different people and sources (dialogue and music) during production. The diagrams in figure 1 and 2 (as published in articles by other recording engineers) reveal schemes similar to the ones Brown discusses using. Audio created by this scheme must be deemed acceptable during

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[1] So new is this technique and equipment that 'mike,' short for microphone, appears in quotes.

[2] *Film Daily* texts can be found at http://archive.org/search.php?query=Film%20Daily%20AND%20collection%3Amediahistory

[3] Wednesday. Feb. 24, 1932, Vl. 43, pg. 5. http://www.archive.org/stream/filmdailyvolume55859newy/filmdailyvolume558

that recorded take, or else the audio would be of little use as it was difficult to alter after creation. The complexity of these efforts and the difficulty in achieving results added to the mystery of this new recording engineer, as he was master of the process.

The Role and Place of the Monitor Man

Despite the seeming clarity of purpose of the Monitor Man, practitioners at the time expressed difficultly defining and explaining the role and position, a foreshadowing of the later controversy attached to his name and technique. The Monitor Man never found a stable place in filmmaking practice, either practically or philosophically. Even so, the importance of complex sound and his purpose in creating it seemingly required the filmmaking community to at least attempt to find one. Interestingly, so fundamental was this confusion that even self-declared Monitor Man themselves struggled to do so as well. In a 1929 edition of Transactions, Monitor Man C.A. Tuthill wrote an article titled "The Art of Monitoring," which addressed the required abilities of his position: "He must have the brain of an engineer, but the heart of an artist" (Tuthill 173). Thus, this new role was to embody the ideal of film as the combination of Arts and Sciences, a moniker taken in 1927 as the film industry's own created body: The Academy of Motion Picture Arts and Sciences. Sound for the Monitor Man was science, but its implementation was art, as the very title of Tuthill's article declares. For his part, Tuthill embraces the confusion regarding the Monitor Man and attributes it to the very importance and complexity of his work:

> The qualifications of a monitor man are far greater in scope than is generally conceded. They include practical experience and a generous knowledge of subjects never touched upon when this individual is discussed openly or otherwise around the movie lots. He cannot apply the slide rule, nor can he assert positive limits. He must be capable of adapting his facilities to his problems. While his limitations bear a definite relation to engineering, they also bear as great a relation to photography and action. Therefore, his limits are determined only by himself; and hence if he be genuine, he is very definitely an artist. (Tuthill 173-4)

Even as Tuthill claims great artistry and purpose for his profession, he still struggles to explain the Monitor Man's role and place in the greater filmmaking community. He attempts to do so by comparing his work to that of more established professionals, above invoking such disparate film workers as photographer and engineer. He later expands this argument: "His work has a definite relation to engineering, yet he is not wholly engineer; it has a perpetual relation to photography, yet surely he is not a photographer; most certainly it has an inseparable relation to acting, and just as certainly he is not an actor, though directors frequently call him a bad actor. He is not a mechanic. He is not a freak..." (173). Tuthill is more concrete expressing what his position is not than what it is. Considering the range of professions the Monitor fits in some ways but not in all does suggest the profession is indeed a freak, a charge Tuthill is sensitive to as he expressively denies it. Given that, he not surprisingly acknowledges the Monitor Man's conflicts with the existing film hierarchy. Strongly suggested here is the sense that Tuthill is responding to a wider debate, one in which those with a rather

negative opinion of his craft prevailed. He states that the Monitor Man is discussed "openly and otherwise," implying that there have been declamations as well as whispers about his work. He also appears defensive about these discussions within the filmmaking community as he claims there is more to the role played by the Monitor Man "than is generally conceded." As per Tuthill in his 1929 article, the Monitor Man came into direct conflict with directors, the rulers of the set. Tuthill states that sound recordists were granted the power to overrule a director on the set and call for a new take. As a sign of how such authority upended the existing order, Tuthill urged his brethren to exercise caution in utilizing this power: "My Motion Picture experience has been with only one company [Paramount Famous Lasky Corp], and there the monitor man has the authority to O.K. or N.G. a 'take': but he must not abuse the privilege" (Tuthill 176).

At the same SMPE conference as Tuthill, fellow sound recordist H.C. Humphries also presented on the practice and role of this new practitioner. At the Q&A following his address, another technician challenged him about the precise role and indeed the very existence of the Monitor Man, asking: "Also, what does the monitor man do? Is he really necessary? If you left him out would the music be better than what we get now? If you let him out would the outcome be better than what we get now?" (Humphrey 169). In response to this, Humphries attempted to define the power and place of this new position as one parallel of the camera crew. For him, he placed the Monitor Man as a sound parallel to the picture crew and below the director: "He corresponds to the cameraman in a picture. It is up to the Camera-man to obtain the best picture he can while the Monitor-man is responsible for obtaining the proper acoustical treatment of the sets and to balance the voices of the artists or the instruments of the orchestra... I believe the Mixer-man to be the most important individual in the Sound Department, because of his judgment on acoustical matters and sound quality" (Humphrey 170). Indicative of the film community's struggles over the Monitor Man's presence, Humphrey's published article uses various titles and spelling of the position: Monitor-man, monitor man, Mixer Man, Mixer-man, and mixer operator. During another 1928 Society of Motion Picture Engineers' conference, sound engineer Donald MacKenzie compares the role of the Monitor Man to the projectionist, another position that would lose its discretionary powers during the transition to sync sound. He also claims that the Monitor Man's judgment should hold over other sound specialists, as all audio work must coalesce under his control.

The Monitor Man Enters the World of Fiction

The Monitor Man's sudden and striking impact on the production world was not limited to the filmmaking community but also seeped into the popular press of the day, a clear sign of the impact and controversy over this recording engineer. An article by Elaine Ogden in a 1930 *Photoplay* dramatizes the Monitor Man's startling appearance in the filmmaking world by declaring that he was a god: "Meet the new god of the studios. We unlock the door of the mystery room of the talkie stages and show you the man inside — the magician who can make or break the voices of the stars" (Ogden 77). He listens in on the set as magician or god as he watches from his perch above and yet his title declares him a man. The caption to the above photo in the article reads: "And high above, seen through the window, sits the monarch of the

phonoplay, the Man in the Monitor Room — that all-powerful technician who regulates the flow of sound from actors' lips" ("Photo." 50). (fig 3)

The article portrays the Monitor Man as literally above the existing production world, but this embodied physical distance became a psychological one as well: "In a little room perched high above the sound stage, away from the temperament and excitement and petty chatter of the set, overlooking the beauty and glamour of the studio world, sits a solitary man anxiously toying with what appear to be four or five radio dials" (Ogden 76). Whilst the Monitor Man is above the typical emotional turmoil of the set, he still exerts authority over its inhabitants. Ogden explains in her 1930 *Photoplay* article on the Monitor Man, "Inside the Monitor Room," that as of 1929 the Monitor Man had become a powerful figure who reigns over the filmmaking community. The article also implies he may not be a beneficial or merciful one, as he "looks down" upon those he quite literally monitors. Ogden also refers to him as "a hard boiled guy, this god of the high places" (77), implying a roughness and ruthlessness to his behavior. Simply put, the Monitor Man had tremendous authority over actors because of his authority over their voices: "He knows what he can and can't do with the voices in his power. He knows all the little speech foibles and vanities of the stars. He knows that he controls their destinies and could, if he chose, ruin any scene for them" (77). This apparently simple, unadorned room he records from becomes deified as well: "This little room, which contains only him and a loudspeaker, is called a monitor room. It is, really, Mount Olympus and Valhalla." (figure 4) The seemingly benign technical gear and placement of this sound recordist were deified as well. Early film engineers K.F. Morgan and T.E. Shea published photos of the set during the era in their article in *Transactions of the American Institute of Electrical Engineers*. One seemingly shows the face of god, where the horns of the monitor man are the eyes and his window the mouth. Imagine the godlike authority of his booming voice powered by the horns "talking to the people on stage" emerging from this "face," a loud disembodied voice of authority from a barely figure above. The same article features views both of and from the monitor room (figure 5).

Photoplay also published a photo under the headline: "Here Is How the Talkies Changed Our Best 1929 Studios." The text accompanying the above image continues the trend of proclaiming the Monitor Man as a god, the unseen figure that rules the world of Hollywood:

> An important gentleman is not visible in this picture. He is the monitor, the new power behind the pictures. The monitor is an electrical expert who sits in a sound-proof booth overlooking the stage and controls the volume of sound that reaches the machines in the recording room. He prevents the players' voices from reaching the screen either too loudly or too softly. Here, then, is the new studio lay-out. Note how the cameraman, a former over-lord of motion picture making, is retreating in power, giving way to electric experts. The electrician is the new god of the films. ("Here is how the Talkies have Changed our Best 1929 Motion Picture Studios." 26-27)

The Monitor Man again disrupts the existing power structure, particularly the authority previously held by the cameraman, and rises above the existing system,

even though he, like a mystical god, remains unseen both in set and even in photographs (figure 6).

Two films, both entitled *The Studio Murder Mystery* (1929 as directed by Frank Tuttle and 1932 as directed by Joseph Henabery), dramatized the coming of sound and the power struggle that it precipitated. The 1929 version, shot on the newly constructed Paramount sound stages, concerns a murder of a philandering actor Richard Hardell (Fredric March) at a movie studio. He is murdered by a director (Walter Oland) who manages to initially escape detection through the use of his skills as a ventriloquist by throwing his voice. One scene includes a sound crew filming another ventriloquist and features a sound recordist visible in the frame in front of his dials, performing duties as a Monitor Man would (figure 7). In another scene, rain and thunder echoes in the background as the characters speak. This scene provides an example of complex sound as what would have been recorded on set during filmmaking by an actual Monitor Man. The 19-minute 1932 film likewise features a murder, this time of a tempestuous leading lady (Thelma Tipson). As the murder occurred in the low light and no one clearly saw who did it, the authorities (Donald Meek and John Hamilton) turn to sound to help solve the crime, and the story dramatizes the presence and role of the Monitor Man in the drama. In a 1931 *Film Daily* report, Harry N. Blair reports on the strangeness of this production of a film within the film: "Reversing the usual order of making up a double to look like the principal, Frank McNelis, who plays the part of a monitor man in Vitaphone's 'The Studio Murder Mystery,' had to make up to look like Dean Cole, actual monitor man, when the latter was used in the first scene pending the arrival of McNelis at the Brooklyn studio" (Blair 5). In course of the investigation, Dr. Crabtree (Meek) visits the monitor room and there the Monitor Man (McNelis) informs him "You can see about everything from here." Whilest there, though the microphones, they overhear a gossip reporter (identified as Mr. Pearson) saying, "If I wanted to talk, I could give these cops an earful." Meek then asks the Monitor Man who that man is, and he tells him that he's a gossip reporter who "knows everyone's business but his own." From his perch, now the Monitor Man knows more, as he hears without being seen. He is not embodied on the stage and yet has the power to overhear a conversation taking place there—making the term "monitor" literal. Taken in this context, the Monitor Man visual and audio authority and ability does appear to be godlike. When confronted, he remains reluctant to talk until Meek points out the microphone overhead and informs the reporter that he has forgotten the power of the microphone and, by inference, the Monitor Man. With that, the gossip reporter tells them his information.

In the fictional tales from this era, the Monitor Man would not always remains so invisible and above the existing fray, and some of implied malevolence of this profession would come to the fore. In one tale, this version of the Monitor Man is a lead character, a rare example of a below-the-line technician compelling not only public attention but also, in this case, scorn, fear, and rage. In 1929 *Photoplay* published a story in which the Monitor Man and his newfound authority take on a decidedly more sinister side. In Stewart Robertson's "Rosie Rolls Her Eyes," the Monitor Man is the Hollywood villain, in this case the nefarious Emerson Slipe,

“Hollywood's newest menace, the expert in tonal vibrations.” (Robertson 45) (figures 8 and 9).

The story opens with the director, the onetime power in the film production hierarchy, being dressed down by the Monitor Man, the new authority. Slipe tells the hapless director that he and his work are now as meaningless as the “horse car,” an outmoded technology, due to the arrival of the Monitor Man and his new electronics. He directly challenges the director on set, telling him to “sit down” and then, perhaps befitting an abrasive sound recordist, to “shut up” (86). He quickly asserts his authority over actors, telling a group of them, “I’m the new boss, and all the dirty looks in the state won’t alter the fact.” Yet, for all his power, his authority seems to reside only on set and with his equipment. A cab driver, upon seeing Slipe awkwardly embrace an actress who screams, drags him out of the car and “plumped him down on the well oiled highway” (97). In addition, despite his near sexual battery of women and pathological masculinity, the story frequently portrays Slipe as feminized — the story describes him as small, little, and dainty (98) and he is shown to be an awkward kisser (99). Even those who know him deride his masculinity. The story references how in later years, Slipe “was wont to entertain his friends with a partial account of his scanty love life in Hollywood, only to be received with disbelief and derision” (98). This episode serves to emasculate and dehumanize this Monitor Man for his failure to conform to traditional gender roles.

He also exists in uneasy relation to established norms and schemes of filmmaking practice. His power resides in his authority over sound, but the existing hierarchy uses that very sovereignty to destroy him. Ultimately, the actress Rosie seduces and betrays the awkward Slipe. Rosie enters the forbidden monitor room to seduce Slipe:

> “You — you're not supposed to come in here," stammered Emerson Slipe, the tone expert.
> "Why, Emerson!" pouted Rosie. "Not stay close to my tiger man when I'm not busy?” The purple eyes filled with tears. "You wouldn't say no, honey?”
> The soothing touch of lacquered lips on the back of his neck completed the enfeebling process of love, and Mr. Slipe smiled dizzily at passion's child. "I guess not," he promised, “but remember, we'll have to keep quiet." (99)

(Figure 10) Rosie then lures Slipe from his monitor room. Once out of his chamber, her fellow performers break into the once sacrosanct chamber and bring the producer with them. Rose leads Slipe to the set and induces him to say negative things about the producer with the microphone overhead. In the monitor room, the producer listens to this all and after hearing it fires the Monitor Man. The actors turned the technology of the Monitor Man against him, revealing the authority was more in the equipment than the man. Stripped of his technology, the Monitor Man falls prey to the existing, traditional filmic hierarchy — specifically here, the authority of the producer and the seductiveness of the actress (100). His dependence on technology as the root of his power reveals the inherent weakness of this sound recordist once he is removed from it.

The Fall of the Monitor Man

The godlike reign of the Monitor Man ended as rapidly as it began. A few short years after his arrival to great fear and fanfare, the film industry cast the Monitor Man out in disgrace and contempt. By 1931, the very title of Monitor Man was almost entirely expunged from American studio system as sound technicians adapted less scandalous titles such as recording engineer or sound recordist. *Film Daily* published cast and crew listings for Hollywood productions. During 1930, there are 166 references to a Monitor Man — nearly all in crew listings for productions.[2] The last such reference in *Film Daily* is on Sunday, Sept. 14, 1930. After that, the term is only used three times in 1930 and never in production listings. By 1931, there are only 11 references to a Monitor Man, and all are in gossip items where recordists are referred to by this title. By 1932, there are only three references, and again all are mere mentions in gossip blurbs. That same year, *Film Daily* published a list of "Hollywood Paradoxes" as compiled by the Paramount Publicity Department[3] — one refers directly to the practice of the Monitor Man: "A 'sound mixer' who really mixed sounds would lose his job" (Wilk 6) (figure 11).

The film industry rejected the Monitor Man due to concerns over the quality of his product as well as for the way the practice of his art upended accepted hierarchies. In 1930, film engineer Joe Coffman presented to the SMPE and wrote an article largely devoted to rejecting the work and philosophy of the Monitor Man: "There is probably more 'hokum' practiced by the man at the mixing panel than by any other talking picture artisan. The old-line film man has felt himself helpless before the onslaught of the electrical and recording technicians and has permitted a great deal of guess work to pass as 'art'" (Coffman 173). Here again, Coffman expresses that the previously existing hierarchy — referred to here as "the old-line film man" — had been disrupted by the arrival of the Monitor Man. Coffman also explicitly rejects the artistry of this sound engineer, much as once the art of the projectionist and musician was once embraced by its practitioners and then rejected. As such, Coffman declares a new guideline for production — the mixer shall not mix — that denies the Monitor Man's most distinctive aesthetic influence on filmmaking. In 1930, the Academy published a book on sound technique in which an article by sound engineer J.P. Maxfield also expressly rejected the Monitor Man's mixing: "Except under very unusual conditions, the mixer dials should be set at beginning of the take and not touched thereafter. Anyone who has done much mixing will realize the discomfort of complying with this rule, because of the natural tendency to twist the dials. Someone has facetiously nicknamed this tendency 'mixer's itch'" (Maxfield 204). The film industry created a negative nickname for Monitor Man's now rejected technique of manipulating sound levels and his imprecise artistry, or "guess work." The Monitor Man's brief rule formed something

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[2] *Film Daily* texts can be found at http://archive.org/search.php?query=Film%20Daily%20AND%20collection%3Amediahistory

[3] Wednesday. Feb. 24, 1932, Vl. 43, pg. 5. http://www.archive.org/stream/filmdailyvolume55859newy/filmdailyvolume55859newy_djvu.txt

of a bridge to the era of analog post-production, when the job of the sound recordist became more the provision of raw materials (sound recordings) to editors who would alter it, a practice that took away the Monitor Man's authority to implement his own artistic vision, in this case through a live mix on set. With the advancement of re-recording techniques (dubbing and duping, for example), analog post provided greater control and precision over the final audio as the mixing process could be repeated, altered, and augmented until a proper or at least acceptable result was achieved. The Monitor Man, as noted earlier, recorded sound a single track that was difficult to alter once it was obtained. The Monitor Man, it seems, came to embody the inflexibility of this early sound recording practice and the limited technology that created it.

The system of analog post functioned in a crude and limited form prior to and during this transitional era. In 1928, while discussing the Monitor Man's technique, sound recordist Marvin also notes that there was a rival technique to achieve complex sound, one where aspects of music, effects, or dialogue could be recorded later and then added to production sound — namely, analog post-production. Martin believes that both the Monitor Man and analog post techniques were "feasible and each has its advantages" (94). This era saw technique and technology rapidly become more advanced and refined and with those changes analog post gave a different set of practitioners more control over film product. Salt notes that by 1931 it was possible "to mix a separately recorded music track with the synchronous dialogue track recording after the editing stage without the audible loss of sound quality…." Thus, with these advances, the analog post-production system became increasingly capable. Salt writes that until 1932, soundtracks generally used either music or dialogue but never both unless they were recorded simultaneously (43). Once multi-channel recording was introduced in 1938, Salt writes: "there was now the full freedom to assemble as complicated sound tracks as could be desired…." (43) With these advances, the analog post-production system offers a potentially more sophisticated and flexible way to create complex sound — the soundtrack as created from a variety of sound elements after production. Utilizing this analog post-production scheme, practitioners could potentially exert far more aesthetic authority, resulting in a far more standardized exhibition than under the Monitor Man's system or the silent-era post schemes. This resulted in a new aesthetic for filmmaking, one removed from the live artistry of both the set during production and the silent-era theater during exhibition. In the new mode of filmmaking, films increasingly only simulated live events and were less defined by them.

A New Era of Filmmaking — And a New Art

The rise and fall of the Monitor Man reveals a fundamental shift in the creative control and process of filmmaking and exhibition with the rise and implementation of analog post-production. The Monitor Man serves as an intermediate between two very different post-production schemes — the silent-era and analog versions. He attempted based his technique on the exploitation of live sound (much as his silent era's predecessors did in theaters at the moment of exhibition) but did but so during production on the set. After his demise, control shifted to the practitioners of the post-production process, one with a distinctly different aesthetic. The system of

production that came to characterize analog post distances filmmaking from the artistry of the moment, the creative sphere of the cinema and the musicians of the silent-era and the on-set recordings of the Monitor Man. In analog post, filmmakers quickly realized that the creative process could be potentially endless as L.E. Clark, Director at Sound at Pathé Studios, acknowledged in a 1929-30 article: "It has been said that a stage play is not written, but rewritten, and the same expression holds true even more literally in the case of motion pictures. If it were not for the fact that a definite limit is set on the amount of money that maybe spent on a photoplay and a time limit also set as a release date, a director might go on making and remaking his picture for months, as he would always keep finding newer ideas to improve it" (Clark 243-4). With analog post-production in place, filmmaking becomes a potentially different art, one where the final form is less tied to production and exhibition than ever before.

Why the near hysterical response to the presence and practice of the Monitor Man? He certainly challenged the existing industry hierarchy. In addition, the introduction of sync sound altered how films were made and exhibited and which professions survived such changes. I argue that the fear accompanying his arrival in filmmaking reflects a fundamental truth for filmmakers. Simply put, sound is more important than picture for one critical reason — technically or aesthetically poor audio proves more disruptive to the audience that the low quality image, an aesthetic of viewership true to this day. Consider such critically, commercially, and/or culturally successful films as *Pi, Elephant Man*, *Brothers McMullen*, *Clerks, Eraserhead*, or *Primer* or untold dark, grainy, shaky horror films. There is little doubt they look very unpolished in their footage and yet many achieved remarkable success for both the films and the filmmakers. In one extreme case, the evolving diegetic camera genre (often referred to as "found footage" films and a phenomenon I will return to in Chapter 5) places the camera inside the movie and often in the hands of non-professional operators who are also characters. These movies embrace and even foreground "poor" camerawork, highlighting the apparatus, breaking with a century of American studio system practice that attempted to limit and disguise it. The films, though, embrace shaky and out of focus shots, uneven shot composition, in order to become immersive. The sound quality of the released films, however, remains generally high and at times is completely rerecorded. For example, if the sound in *Blair Witch* truly came from the consumer camera and boom mic in the diegesis, the sound track would be far different. We would hear little of certain characters in some scenes and far more of the surroundings. Poor quality visuals may still be immersive but low quality sound remains distracting and disruptive to audience immersion.

Filmmakers of this transitional era discovered spectators tended to be extraordinarily sensitive to any deviations from perfection. Fitzhugh Green writes in his 1929 book, *The Film Finds Its Tongue*:

> That was what was so hard — maintaining the synchronism. And it must be maintained exactly…. There are sixteen pictures to each foot of film. Each one of these pictures is known as a ''frame,'' and passes before the lens in less than a sixteenth of a second. If film was *one frame out of synchronism*, the listener was conscious that ''something

> was wrong'' — it was hard to say what except that it didn't "sound just right." If it was two frames out, the lack of synchronism was plainly evident. If it was three or four frames out, the lip movement and the sound didn't tie together at all — it might as well be someone else speaking! (Green 68)

The smallest break in sync (a mere two frames, as Green maintains) disrupts spectator's absorption into the film, a major issue the delayed the widespread implementation of sound filmmaking.

Doane and Altman point to more of a subliminal force associated with sound in film. In her work "Ideology and the Practice of Sound Editing and Mixing," Doane notes that death and life are consistently used as metaphors about sound (57). She notes that spaces with low reverberation are referred to as being "dead," and reverberation and sound itself are often described as adding life to a picture. In his 1929 book on the transition to sound era, Green also uses a series of metaphors of life and death for sound, revealing how this was no new trend. He declared that "Movie makers had tried to kill the Talkie" (274) but Warner "hung together like grim death" (85). He cautioned: "Had Vitaphone been launched quietly it would no doubt have died a quiet death" (87). The same metaphors apply to general film production, as he described the silence before performance on the set as "dead stillness" (205) and a "dead hush" (237) and referred to the secrecy of production techniques as "dead secrets" (220). For Altman, synchronous sound is phantom-like, ephemeral and enigmatic. Sound dominates for no other reason than it is mysterious and hard to qualify:

> By virtue of its ability to remain sourceless, sound carries with it a natural tension. Whereas images rarely ask: "What sound did that image make?" every sound seems to ask, unless it has previously been categorized and located: "Where did that sound come from?" That is, "What is the source of that sound?" Far from ever being redundant, sound has a fundamental enigmatic quality which confers on the image the quality of a response, and thus a certain sense of finality…. The image, in terms of sound, always has the basic nature of a question. Fundamental to the cinema experience, therefore, is a process, which we might call the sound hermeneutic whereby the sound asks where? and the image responds here! (Altman 74, "Moving Lips")

Issues in sync and quality would disturb this potent relationship with sound and image. With the live presentation of the silent-era, far fewer of these potential fears were present. There was no concern over source, as it was visible, and far less of sync, as the sound was less directly linked to the visual source. Quality remained an issue, as written of above, but far less of one with audiences that typically accepted the musical accompaniment.

Given these enormous issues with both the variance and sheer quality of exhibition during the silent film era, there are curiously few complaints about the system from practitioners in the era's American film industry journals. In his 1924 article "Importance of Synchronizing Taking and Camera Speeds," Richardson does express shock at the lack of outrage from the filmmakers over these various

intrusions onto artistic expression in silent-era post: "When the producer, who has expended huge sums of money and tremendous effort, finally looks at in the finished state in his screening room, I wonder if he realizes that but relatively very few theater audiences will ever see it exactly as he has seen it" (Richardson 119-20, 1924).[4] He reiterates his point later in the same article: "I have asked before, and I again ask, does the producer really take the slightest interest in the way his productions are placed before the public? It would seem not…. For some reason, which the ordinary mind cannot comprehend, the producer does not seem to be in any way interested in this man-handling of his product, or if he is he does not make even the small"(120). He wonders why producers employ high-grade talents and precisely create films only to have them projected in such a ridiculous way that makes the actors appear as "animated jumping jacks." He recounts a story of watching a star view her performance ruined on screen by overspeeding, but she, instead of being indignant, merely giggled at Richardson's consternation (Richardson 120-1, 1924). For audiences at the time, they tended to accept and even embrace such variation in presentation, but with sync sound, filmmakers found they could no longer take such liberties with exhibition. Sync sound attempted far more realistic sync sound and as such faced a higher bar for audiences to accept it. In the silent era, audiences did not need to hear someone speak, but they expected to do so in a sync sound film. Furthermore, audiences knew what a good audio presentation of dialogue should sound (in quality) and look (with respect to sync) like. The sheer desperation to create a natural sense of complex sound lead the industry to initially embrace the somewhat dubious practice of the Monitor Man, who for a brief time possessed a great deal authority over audio's creation and thus filmmaking, For those years he attempted to replace the entire post system during production for an audience that demanded far more realism than they ever did from his processor. In the end, he failed to do so, and a new system — analog post — with a myriad of new film workers replaced the old version. With that system entered a new aesthetic — filmic creation after production during the true authorial process of filmmaking and its practitioners. Thus, with the transition to sync sound, the birth of a film enters a new chamber and aesthetic sphere.

[4] To some degree, this is still true today. Rarely will filmmakers see and hear a better version of their film than in the mix room or a special screening room at a film laboratory, but that shift in quality and version is comparatively minor compared to the massive variations of the silent era.

Figure 1: Here are two schemes for recording sound in this transitional era. The top diagram features one microphone for three actor positions. The bottom diagram shows three microphones for three actor positions, where the recording engineer could potentially mix audio from all three sources. (Maxfield 90)

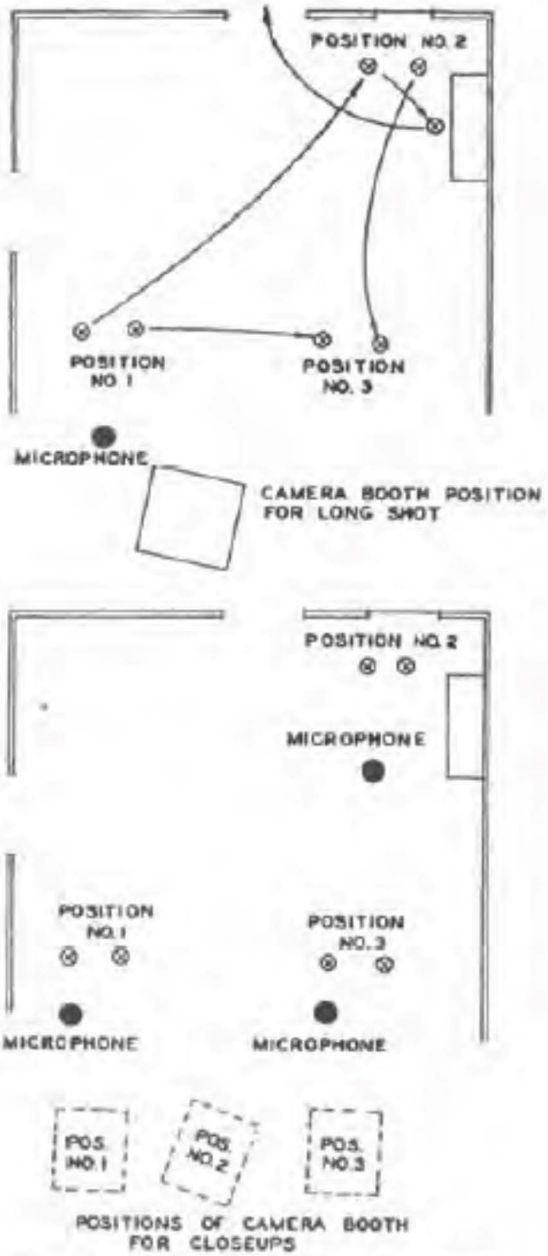


FIG. 2. Microphone and camera placement.

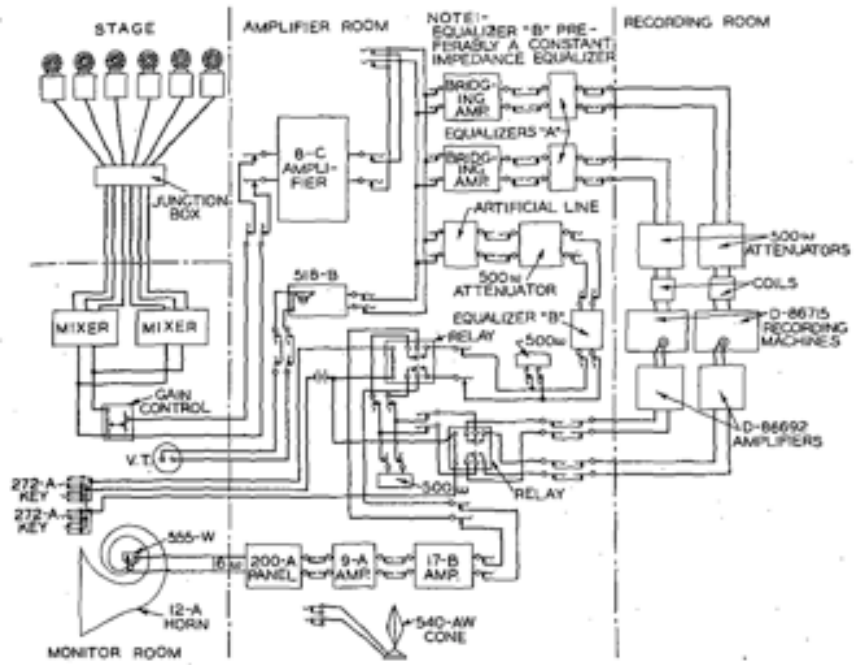
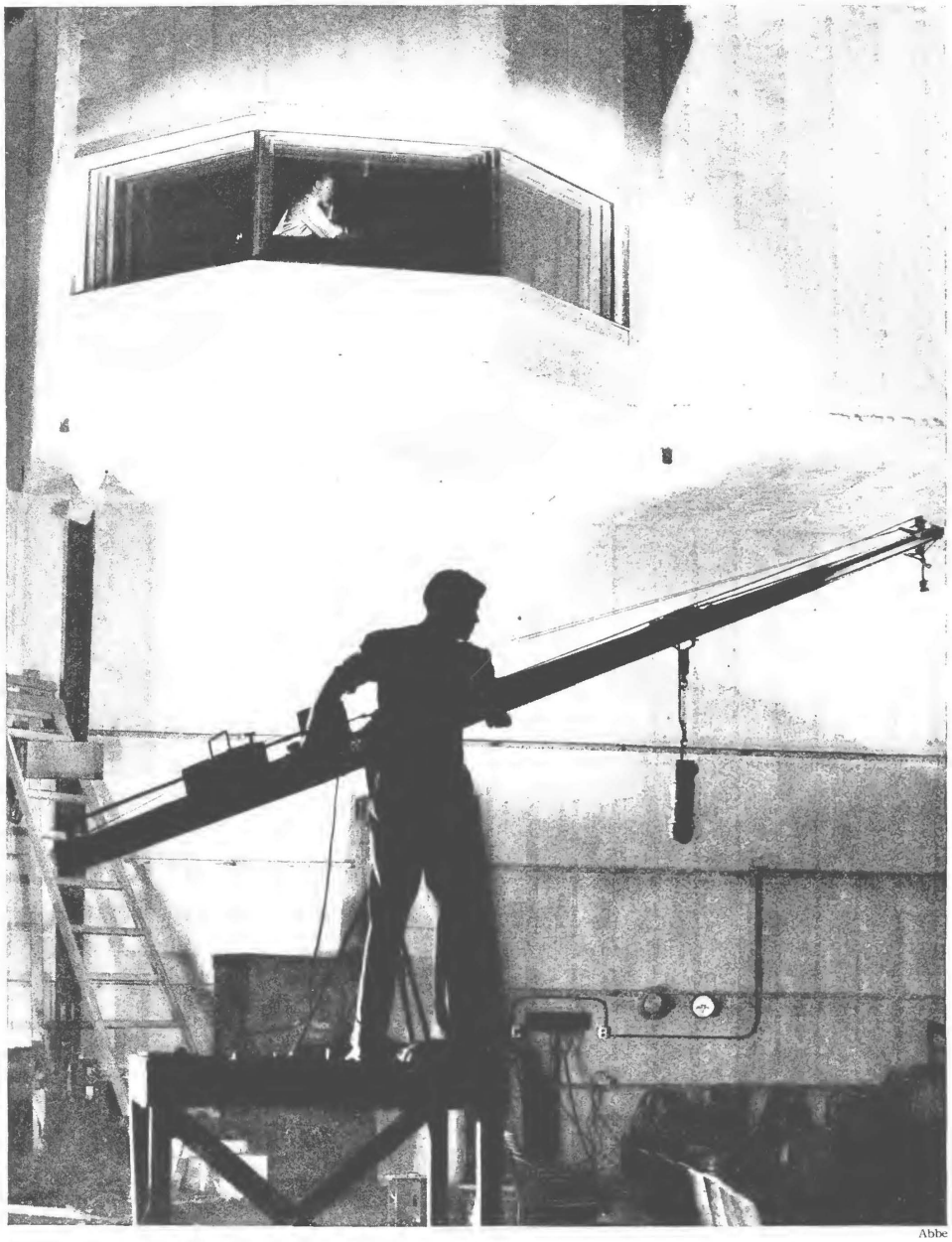


FIG. 4. Schematic diagram of the studio equipment for sound recording.

Figure 2: Another diagram for a Monitor Man recording set-up. Please note the six microphones on the stage in the top left and the monitor room horn denoting the monitor room on the bottom left. In between is the science of his art. (MacKenzie 735)



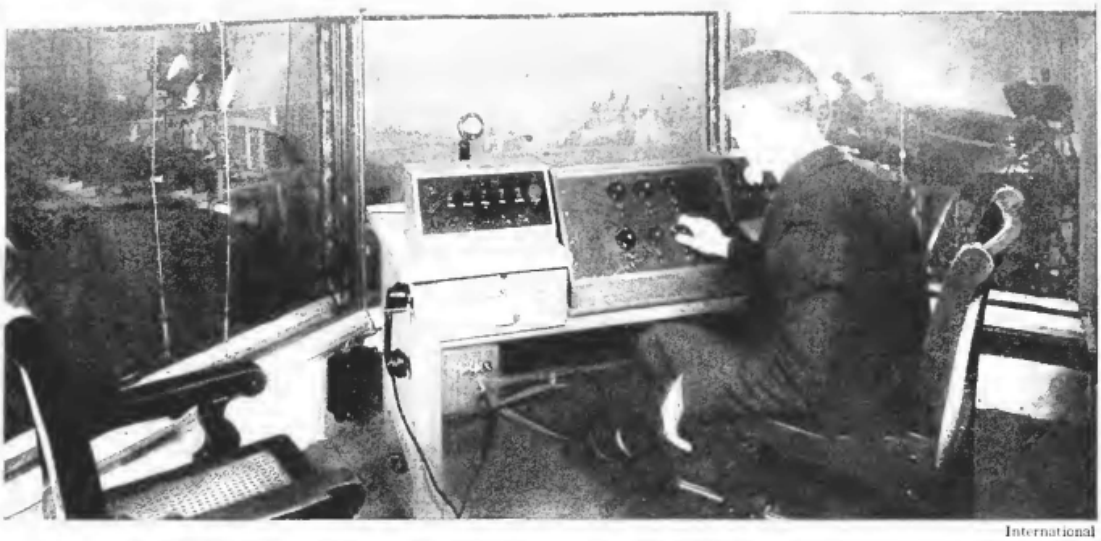
Abbe

A BEAUTIFUL thing of light and shadow—and a picture of a great sound stage in action. In the foreground one of the crew is adjusting a microphone arm for a talking scene. And high above, seen through the window, sits the monarch of the phonoplay, the Man in the Monitor Room—that all-powerful technician who regulates the flow of sound from actors' lips

50

Figure 3: In the photo published in Ogden's article, the Monitor Man does appear godlike in his window above the set. ("Photo." 50)

Figure 4: The view of and from the monitor room, described in the article as the mythical Mount Olympus. The caption refers to him as "the newest power in cellulodia." (Morgan and Shea 107)



International

The monitor room of the United Artists studio in Hollywood. Here you see the monitor—the newest power in celluloidia—at his "mixing table," pulling up and toning down the voices of the stars. Through the observation glass, the monitor watches events out on the studio floor. He observes the vocal tricks of the film folk and has his hand on the proper knob to prevent voice skidding

Figure 5: The Face of God? Here the monitor horns through which the Monitor Man communicated with personnel on the set could be the eyes of the face and the monitor room window as the mouth. (Morgan and Shea 106)

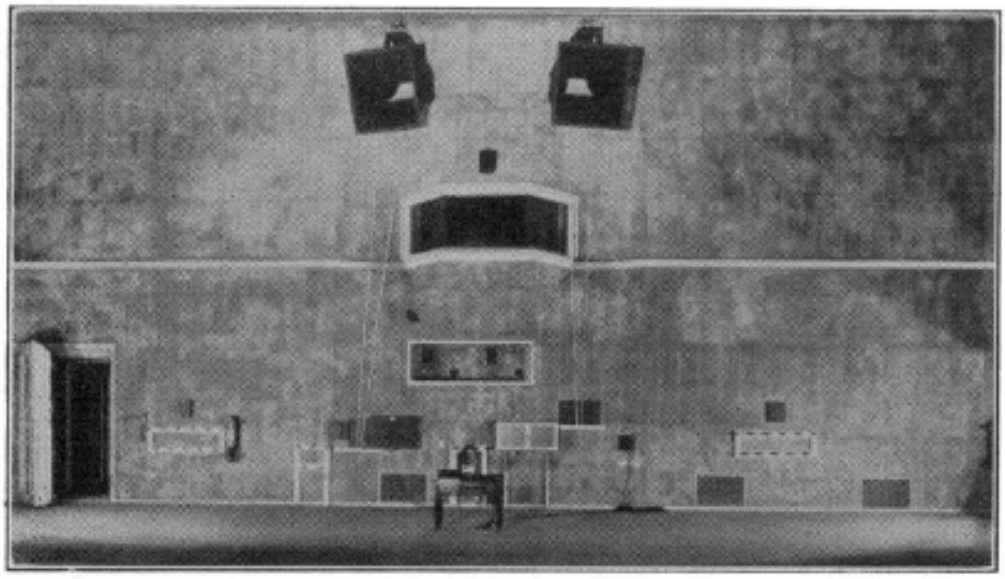


FIG. 3—INTERIOR OF SOUND STAGE

Note monitor window and horn used by monitor man when talking to people on stage

Figure 6: A photo of the new soundstage. Please note the two microphones circled in white. The accompanying text explains that the Monitor is not visible in the photo: "Note how the cameraman, a former over-lord of motion picture making, is retreating in power, giving way to electric experts. The electrician is the new god of the films." ("Here is how the Talkies have Changed our Best 1929 Motion Picture Studios." 26-27)

Figure 7: Screen capture from 1932 *Studio Murder Mystery.* Please note the Monitor Man with his controls on the bottom left. On stage top right, being filmed, is a ventriloquist, as sound is thematized in the narrative.

Figure 8: Rosie from the short story, "Rosie Rolls Her Eyes."(Robertson 45)

Figure 9: In an illustration from "Rosie Rolls Her Eyes," the bow tie wearing Monitor Man, Emerson Slipe, clashes with the director as the set watches. Note the two on the far right who appear to already gossiping about this behavior. (46-7).

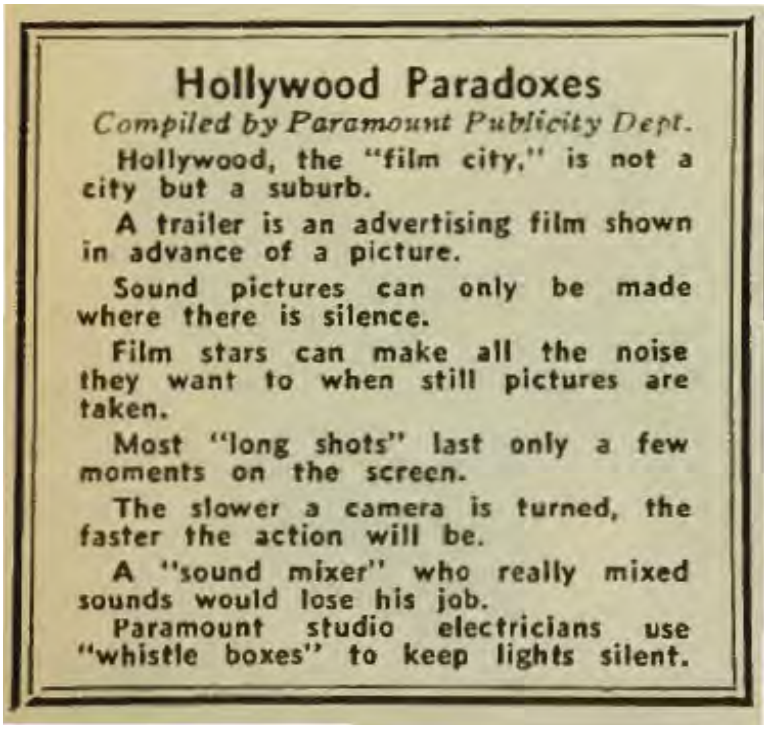
Figure 10: Rosie seduces Slipe in the Monitor Room, as the new technician falls prey to another power of the production world, the actress. She feigns interest in his technology, compliments his masculinity, and summons tears to capture his attention in her plot to destroy him. (44)

Here is the first short story of the

Illustrated by
Frank Godwin

"You—you're not supposed to come in here," stammered Emerson Slipe, the tone expert. "Why, Emerson!" pouted Rosie. "Not stay close to my tiger man when I'm not busy?" The purple eyes filled with tears. "You wouldn't say no, honey?"

44



Hollywood Paradoxes

Compiled by Paramount Publicity Dept.

Hollywood, the "film city," is not a city but a suburb.

A trailer is an advertising film shown in advance of a picture.

Sound pictures can only be made where there is silence.

Film stars can make all the noise they want to when still pictures are taken.

Most "long shots" last only a few moments on the screen.

The slower a camera is turned, the faster the action will be.

A "sound mixer" who really mixed sounds would lose his job.

Paramount studio electricians use "whistle boxes" to keep lights silent.

Figure 11: Paramount Paradoxes. The one regarding the Monitor Man is second from the bottom. (Wilk 6)

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Chapter 4: The Motion Picture Engineers and the Emergence of Aesthetic

An examination of the technical journals of engineers during the 1920s reveals an underlying "evolutionary" logic or philosophy that understood film as similar to a living entity in its ability to evolve as a biological species. Moreover, some engineers came to view their scientific work toward the standardization of technology and technique as helping to shape this process and thus allow film to evolve into an art form. At the first meeting of the Society of Motion Picture Engineers (SMPE) on July 24, 1916, Henry D. Hubbard, the Secretary of the U.S. National Bureau of Standards, said ongoing standardization allowed engineers to shape the development of technology as "mechanical evolution" (Standardization n.pg). I argue that these efforts by the engineers towards the standardization of technique and technology ultimately gave filmmakers far greater control and increased aesthetic options when finalizing a film. They allowed for the creation of a film utilizing an increasing array of sound and image elements that could be manipulated and combined in the analog post-production process. The process, which only grew more formidable, enabled filmmakers greater freedom to create a film more to their imagination and desires and less tied to the reality and the actual moment on the set. This is not to say that possessing such ability automatically created better films. Rather, it simply placed more creative control in the hands of the workers of the post-production process. By placing such aesthetic authority in the hands of skilled practitioners, film evolved by allowing artists to pursue their vision.

I maintain that the SMPE's organization and the members' philosophy evolved as well during this era. Overall, these changes would prove critical to film's emergence as a legitimate art form. To examine this, I will focus on *Transactions of the Society of Motion Picture Engineers*, the publication of SMPE conference reports from 1916 to 1929, and how they reveal a growing sense of aesthetic consideration and artistic purpose amongst early film technicians. As David Bordwell notes, a biological metaphor governed practitioners' philosophical discussions of production processes as well: "In the technical discourse of Hollywood during the 1930s, the link between sound recording and cinematography rests upon a biological analogy. Combined, camera and microphone resemble a limited but lifelike human body" (Bordwell, Staiger, and Thompson 301). I maintain that the technical workers of the era were far more ambitious in extending a biological identity to film as a medium and assuming a critical role in its "evolution" link the changes they facilitated to mutations that enhanced film form and aesthetics. Their belief in film as a living entity allowed them to perceive themselves are more than technicians serving machines. They began to perceive that both their work and the medium they served as having greater purpose. The metaphor of film evolving allowed them to consider the medium to be more than the sum of its parts, systems, and technologies. Ultimately, their role served a greater process, one that resulted in a formidable force in film creation — analog post-production.

Standardization for Early Film Technicians

This chapter concentrates primarily on the discourse of the SMPE, an organization that provided a rich forum for discussions among film engineers. The SMPE's initial

membership of 125 film engineers, nearly all based in the U.S., convened at the request of the United States National Bureau of Standards in 1916 for the express purpose of creating standards for film technique and technology. They sought to address the considerable issues resulting from the wildly different equipment standards and practices used in filmmaking. At the time, each manufacturer of film equipment built machinery to its own specifications. As Jenkins stated in his October 1917 "President's Address," "One projector manufacturer chooses a ¾" height, another ⅝" perhaps, and there is nothing to prevent either from making the aperture he pleases." By adopting an industry wide standard of .678 inches high, Jenkins believed that "the way is smoother for all if each conforms to this standard." He also sought the standardization of filmic technique, citing problems arising from variance in recording camera speeds. While he acknowledged that differing speeds often result from an artistic concern (faster speeds may benefit a slapstick comedy scene, for example), he believed that a set standard would at least allow for some reference of comparison between operators. He also noted an issue of variance between frame lines. In the address, he tells the story of how two camera operators, at the behest of the Federal Government, went to "our Great national parks to take motion pictures of the beauties and wonders therein." When he asked to screen the footage, Jenkins found the photography of these camera operators "so good." However, when their work was edited together, "the ensemble as a whole was horrible, for one camera framed on perforations and the other between." The projectionist attempted to resolve the issue but "soon gave it up as impossible and the audience was the loser. A beautiful picture ruined, and much time and money wasted, all because two cameras with different frame lines were used on the same work." For Jenkins, non-standardized camera work caused problems with the aesthetic quality of the final product.

Janet Staiger compares the early conflict over standards in this era to recent struggles over videotape standards, specifically the clash between VHS and Beta standards where both standards, while independently viable, are incompatible. She places the founding of the SMPE in a larger context of engineering and governmental agencies' efforts around the turn of the century "to promote standardization for economic efficiency and technological progress," something sorely needed for film production (Staiger 535). As Jenkins stated in the 1917 address, the SMPE had no power to demand film industry standards, but its hope was that by meeting and discussing film practices regularly, the Society could at least help formulate suggested guidelines for filmmaking equipment manufacture and practice.

As they considered formulating such technical guidelines, Jenkins and the early engineers increasingly considered aesthetic concerns as part of this science-based effort for standardization. The conference reports of these engineers, *Transactions*, reveal an increasingly speculative and complex discourse going far beyond the purely technical matters to which the engineers initially devoted themselves. They ventured into philosophical concerns as they strove to develop both their science and the medium itself. The pioneering film engineers of the SMPE also provide a rich background to issues that have consumed film criticism since cinema's founding, such as the very nature of the medium. What better way to explore the ontology of film than with the thoughts of those who helped formulate

it? *Transactions* fulfills both of Caldwell's criteria for suggested scholarship and Altman's belief in the richness of such discourse discussed in the introduction of this dissertation.[1] The publications represent the thoughts and concerns of below-the-line workers as they discussed issues pertaining to technology, standardization and film as an artform amongst themselves.

Professional Standards and the Science of Art

In 1916, the SMPE printed its goals in the first installment of *Transactions* (entitled *Incorporation and By Laws*) and in each issue thereafter: "Its objects shall be: Advancement in the theory and practice of motion picture engineering and the allied arts and sciences, the standardization of the mechanisms and practices employed therein, and the maintenance of a high professional standing among its members."[2] The phrase "allied arts and sciences" expresses a concept that proved central to the engineers' developing collective philosophy: Film was an amalgam of both art and science. While standardization was the SMPE's initial and primary goal, its discourse came to address more aesthetic and intellectual concerns. Janet Staiger reports a mere ten people were actually present at this first meeting (535). There, Hubbard placed the entire concept of standardization within the context of a wider crisis of modernity in his address: "Standardization is a big word, almost as broad as civilization, for our manners and customs are merely accepted standards of conduct, our laws aim to standardize human relations, and daily life is governed by standards approved by common consent. Standardization is more than a passing fancy of efficiency experts. It thrives everywhere, often against efforts to prevent. Our daily life has its time schedule. Work and recreation are run by the clock. . . ." (Hubbard, "Standardization" n.pg.). Hubbard writes that while humankind submitted itself standardization across a range of activities, film requires it all the more because it combines so many other arts that each require their own individual regulation: "photography, architecture, illumination, and the drama." For Hubbard, film's distinctive combination of these disparate arts allows the medium to surpass its individual parts and become a synthetic art. More specifically, he believed that that the combination of the arts transcends our conceptions of physically and aesthetically distinct spaces: "[Film] is the magic carpet of Bagdad to take us to all lands, under sea and under land, among the clouds, to fairyland, and into the world's markets, laboratories, hospitals, and factories," making the entire world "a little neighborhood."

While Hubbard focuses on the first two parts of the SMPE's mission statement, the organization's first president, C. Francis Jenkins, addressed the third part: the maintenance of a high professional standing among its members (Jenkins, 1916 "Chairman's Address" n.pg.). The disrepute in which he felt society held film weighed heavily on him, and he framed the SMPE's mandate for standardization as a path to legitimacy for both its members' professions and their product. For Jenkins, film was far from being perceived as the societally changing "magic" that Hubbard saw. He returned to this theme throughout the early years of the SMPE. At the July

[1] These matters were discussed in the introduction.

[2] After this edition, the Society would write, "The objects of the Society are: The advancement. . . ." or simply quote the majority of this statement.

1917 conference, Jenkins spoke to SMPE members about the poor treatment he felt he suffered as an early film practitioner: “It is a bit embarrassing to me today to notice the suspicion in which I am held by strangers the moment they find I am talking motion picture business” (Jenkins, July 1917 “President’s Address” n.pg.). His dreams are not the lofty ones of societal evolution Hubbard saw. He simply yearns for the day when the film industry obtains some professional legitimacy: “I refer to that day, greatly to be desired, when our industry will be respected. . . . There is today no other industry at once both so big and so defenceless. . . . “ (Jenkins 1917, n. pg.). Jenkins saw film industry’s commercial orientation working against the medium obtaining any sense of moral legitimacy as its “openly charged with a deliberate intent to pander to the lowest moral taste; and so we have censorship boards” (Jenkins, 1918 “President’s Address” 5). Film was powerful and “big” and yet helpless and derided — possessing economic capital while lacking its cultural respect.

Yet, film as a medium possessed undeniable cultural power. At the October 1917 conference in his address titled “The Motion Picture Booth,” Jenkins compares film to the printing press. He believed film as a medium had surpassed the printing press due to its universality — a superior ability to serve the people world regardless of their various spoken languages: “[T]he printing press must print for each man in his own tongue, while the motion picture prints in a language all can read. The printing press is autocratic, the motion picture democratic. The immeasurable opportunity for good in the new picture press is rather rapidly coming to be recognized.” Jenkins here praises the ability of film to communicate across cultures and surpass the printing press, due to its reliance on visuals rather than printed language. Yes, to Jenkins, society mocked this medium while enjoying its product: “At this time our industry is known as ‘the movies,’ a term of derision, though the term is so expressive that eventually it will be accepted in our language and appear in standard dictionaries, but at present a term of mild contempt, nevertheless” (Jenkins, 1918 "President's Address"). For Jenkins, the derogatory term “movies” reveals the lack of respect the public had for his “printing press,” a tool that serves those same masses. Films’ authority came through its reach, not its quality.

For film to evolve in a manner that would increase its moral standing and cultural capital, Jenkins believed the language of film needed to evolve as well. Hubbard said much the same to the SMPE in its first year: Film language requires standardization as “new machines, new processes, new materials appear, to which new names are given, some of them apt and striking. They are real contributions to our language and should have standard definition” (Hubbard, "Standardization"). Film’s status as a new and distinctive force demanded a new vocabulary to discuss and develop the medium. This would prove to be of considerable interest to the SMPE as it consistently attempted to codify the rapidly developing and changing terminology used in the industry. This acceptance of this term of contempt to Jenkins, “movies,” would of course be a battle he would lose (as he himself predicted), and it soon entered the growing glossaries named “Motion Picture Nomenclatures” printed in *Transactions*. Those same glossaries show much of the language that we still use today developing from issue to issue. By 1920, such other

crucial and distinctive film terms as "close-up," "cutting," "shutter" and "reel" would take their official place in the *Transactions* glossary.[3] Other terms, such as "thumb mark" and "projecting lens" used in early SMPE publications, would disappear from daily use as the rapidly evolving film technology outmoded them. For example, between 1917 and 1929, the definition of the word "objective" would change as film did, and "projection distance" would replace "throw" as a term for projection as technology advanced.

Perhaps the greatest linguistic struggle for the engineers was over the word "art." Echoing Jenkins' concerns about a lack of quality in filmmaking, engineer John W. Allison said at a 1918 SMPE conference, "The motion pictures still are atrocious in most cases, when they should really be works of art" (Allison 14). Novelty, not quality, drove film, as Allison put it: "The public found a new source of entertainment and the public would not be denied. It *would* have its fill, and while the *novelty* of this *eighth power of the world* was upon them, they gave no thought to the *quality"* (9). The italics are his, perhaps the 1918 equivalent of a mocking shout, his anger palpable at the very public that gave film its financial success denying its development by its taste and demands. Allison expressly believed that this lack of quality stemmed from the lack of standardization and overall efficiency in the industry, with Allison criticizing "every camera man turning in film made under differing conditions of lighting and exposure. . . ." (11). Upset at the poor lighting management on one set that led to the poor quality of shots in one production, Allison said to the SMPE: "The book of the motion picture has three chapters: Literature, Art and Science. Let each one to his own. When the camera starts working and making the record, all that literature and art could do has been done, and unless the exposure is right, neither literature, art nor the science of chemistry can make possible an acceptable result on the screen" (11). Thus for Allison, film was a hybrid of three parts — literature, art, and science, fittingly produced by a team of specialists. Yet all is for naught if the underlying science and technology are not used properly in melding the various talents and forces on the film: "And strange as it may seem, the failure of many fine stories, acted by fine casts, is due to poor photography, for which there is no adequate excuse, as photography is an exact science, the results of which can be predetermined with as much certainty as the weaving of cloth" (11–12). The engineers' work, he notes, is paramount for the cinema, because without their "exact science," art or literature has difficulty emerging: "[A]s the ultimate success of the picture depends primarily upon a perfect exposure, *the conditions under which the exposure is made must be standardized*" (14).[4] As the lighting on the set was never constant, for Allison the shots never looked right (14). With such flawed science, film production limited its ability to make art. Thus, to engineers such as Allison, the medium needed the work of the

[3] Please see "Motion Picture Nomenclature". *Transactions of the Society of Motion Picture Engineers,* May 9-11, 1920. The Society of Motion Picture Engineers. 1920. 7-11. Print. and "Motion Picture Nomenclature". *Transactions of the Society of Motion Picture Engineers,* April 6-7, 1917. Atlantic City, N.J. The Society of Motion Picture Engineers. 1917. 7-11. Print.
[4] His italics, a rarity in printed articles in *Transactions*, appear again, pointing to the passion he felt on the subject.

engineers for film to evolve into an artform even though the public did not demand it.

At a 1928 conference, J. S. Watson, director and cinematographer of *The Fall of the House of Usher* (1928), also wondered if film was an art: "Several years ago a member of the Society of Motion Picture Engineers stated that the motion picture was not then an art and probably would never be, but that theater presentation with colored lights, music, and personal appearances was certainly an art and a very important one. To this another member replied that if the Broadway prologue is an art, the motion picture ought to be happy to remain an industry…." (Watson 219). Nevertheless, Watson noted that film practitioners are quite content to call film art: "(T)he word 'art' continues to be used by almost all the speakers at motion picture banquets. Now without getting involved in the metaphysics one can perhaps say that an art is quite simply a means by which the human spirit expresses itself. Action is also a means of expression, but imperfect and at the mercy of circumstances" (Watson 220-1). In the printed text of his remarks, Watson used the word art" once in quotation marks and once without, a conceptual struggle seen through punctuation. Was film an art, not an art, or an "art"?

"Mechanical Evolution"

When Hubbard returned to address the SMPE in 1921, he expressed great confidence about the nature and future of film, restating his belief that the only limit on the art of film was that of the engineers' own work: "The ideals of the inventive engineer will make the motion picture art of tomorrow, for that art has no limitation other than the creative imagination of the artist and the technical resources of the motion picture engineer" (Hubbard 10 "Motion Pictures"). Hubbard also spoke of the force he believed to be behind film's development: "It is a very old idea that progress comes both by steady improvements, and also by jumps — in biology called mutations" (Hubbard 161). For Hubbard, all the advances and changes going on across the world in film technology were akin to genetic mutations: "Mechanical inventions come by mutations. In the art of communication the speaking trumpet came first. The speaking tube was a device of a new kind — a pipeline for speech. The telephone line displaced the empty tube by a solid metal wire. Finally, the radio telephone is a new art by which one voice may talk with the whole world through space. . . . We must expect new kinds of arts during the coming quarter century" (Hubbard 161). In this scheme, film technology evolves much like living beings do but in a process guided by the engineers.

With remarkable precision and foresight, Hubbard forecast future camera technology in his 1921 address:

> Dare we expect a camera with automatic focusing, automatic aperture adjustment, a camera recording in full color, with bivisual stereoscopic effect, developing the picture instantly, telegraphing the pictures, exactly as recorded, automatically to be filed, and with mechanism for instantly locating any film without index and exhibiting it immediately; a camera with self-sensitizing plates on which not separate pictures but a continuously changing picture is formed and erased after being telegraphed to the storage room; a camera equipped with mechanism for automobile cleaning of the glass

> surfaces, and the whole not to exceed in size the smallest kodak [sic] of today. (Hubbard 166) [5]

He was remarkably prescient in his predictions of the camera in the digital age. He believed engineers needed to dream of such devices and invent them, and such developments from the work of engineers would provide tools for film's artistic development. Indeed, with a camera such as Hubbard describes, filmmakers could far more easily create a technically competent project..

Hubbard spoke in such lofty ways to the SMPE while there were far more presentations on sprockets than on such dreams. He implored the engineers to believe cameras like this were possible. Just as there was a biological model for film's evolution, there was another such prototype for its cameras: "For fear such a camera may be declared impossible, I hasten to remind you that Mother Nature anticipated my specification by some million years when she gave us our two eyes…. Mother Nature as an inventor has done some unpatented miracles and has no copyright on the designs" (Hubbard 166). Thus, this proposed camera emulates and betters its human model and creator. For Hubbard, human beings with the aid of technology surpass nature by creating mechanisms that "can fly better and faster than the bird, outswim the fish, outspeed the deer, with mechanisms of our own devising. Our telescope and microscope vastly excel the eye in seeing the distant and the small" (166). Thus, why could not a camera match or do better than Mother Nature, where the engineers stand in the role of creator? Cinema's "mission, already great, knows no natural bounds and has possibilities of which as yet we dare not dream" (167). For Hubbard, the dreams of engineers could lead mechanical evolution to surpass nature by creating a camera that exceeds humanity by bettering our embodied perception. Unlike a biological evolution, this mechanical evolution required money and human guidance. The engineer replaces nature as master in a process to create an art form to both replicate and surpass its makers. The impact for Hubbard went far beyond merely creating films to increase the art's impact on society, as he declared in his 1916 address to the founding quorum of the SMPE: "The quickening effect of this wonderful art upon social evolution is beyond estimate. To say that as an art it is in its infancy is to state the obvious. Its possibilities are limited only by the power of the creative imagination and the technical powers of the engineer." For Hubbard, film is once again declared human — in this case, an infant. This new life form could only evolve through the work of the engineer, and he made a call to these scientists and the SMPE collective to pursue this vision at their founding meeting.

The SMPE Itself Grows and Evolves

As film developed, so did the SMPE itself, with its membership growing rapidly (Fig. 1). As it did, elements of the Society controversially sought to broaden both its

[5] Hubbard also believed sound would become part of films. He designated the types of sound into categories used today (dialogue, music, and effects): "I look to see a phenomenal rise in the art of incidental sounds, including music, the human voice, and those characteristic noises like the clatter of hoofs, chug of the motor, patter of rain, sighing of the wind, crackling of the fire, and the splash and roar of the sea" (163).

nature and the material presented at its conferences, believing that such a development was necessary for the organization.

Figure 1. *Source:* (Porter 18)

In the October 1925 SMPE conference, then–President L. A. Jones, noting that strong growth in SMPE membership (as reflected in the above chart) had started to taper off, stated in his "Presidential Address" that he wanted to admit other film workers such as directors, producers, art directors, lighting engineers, lab technicians, projectionists and distributors into the SMPE . At a prior conference, Jones compared the organization itself to a biological entity, and as such the SMPE needed to evolve: "We have frequently heard the statement that nature abhors a vacuum and it seems to be equally true that nature abhors stagnation. There seems to be a fairly general natural law that in the case of vital organisms there must be either growth or degeneration. There can be no standing still. This law, I think, applies equally well to organizations of individuals such as nations, states, churches, and societies such as our own" (Jones 15-16, 1924 "Address"). Jones invoked the concept of film itself as a living entity in an extended series of metaphors. The motion picture industry is like the "human animal having physical, spiritual, intellectual, and emotional attributes." For him, the scientist must care for the body because the mind, seen in this allegory as artists, "cannot function properly in a diseased and ill nourished body." Also, a perfect body is of little use "without a properly developed intellect and emotional nature." He concludes that body and mind need each other to survive and thrive: "It seems almost self evident that the health and development of this complicated motion picture organism must depend on the proper functioning of every component organ" (22). He calls on the membership to welcome other film workers into their group to address this mind–body balance in the living, evolving film organism. Film is a complicated life form that needs many component parts to survive and thrive, he argues. Like any good engineer would, he created a precise flowchart of this complex life form, the "motion picture organism":

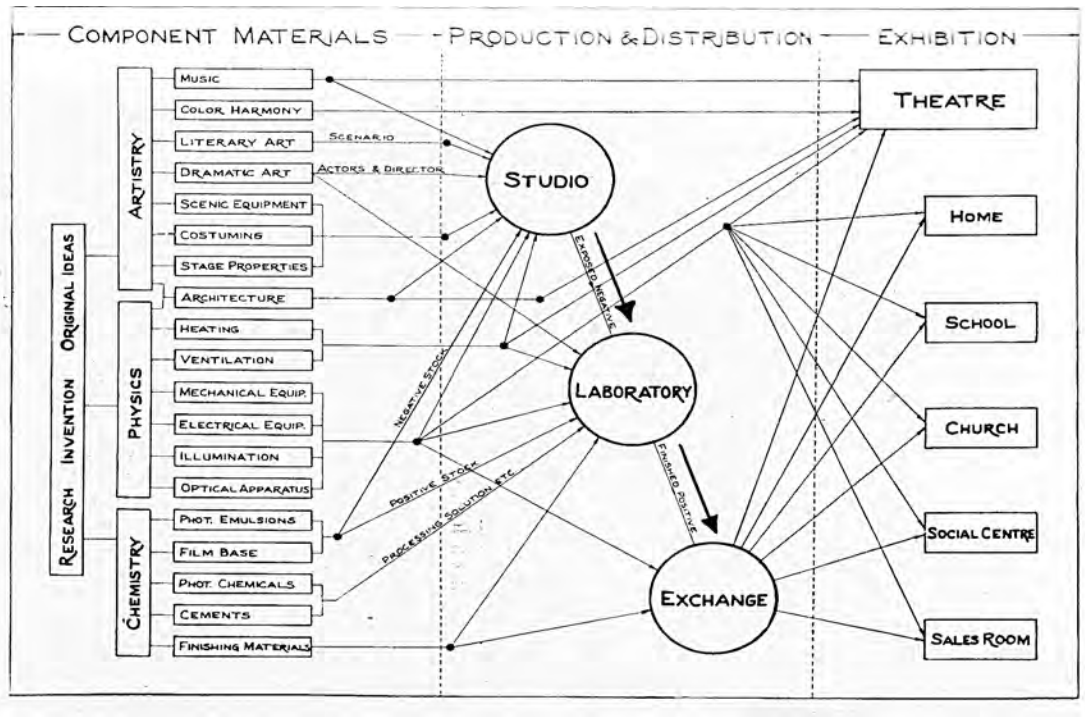

Figure 2. *Source:* (Jones 17, "1924 "Address")

The central nervous system of Jones' charted organism is the laboratory, the realm of the engineer. Research, invention and original ideas (seen on the far left of the diagram above) power this scheme via chemistry, physics, and artistry. These elemental forces freely mix and become a wide variety of items ranging from literary art to cement, ultimately collecting in and emerging from the laboratory, but they are also essentially connected due to their emergence from the same core forces as seen on the far left: research, invention, and original ideas. To conceptualize the SMPE'S role in this scheme, Jones declared that engineering should not be viewed as it was originally and narrowly defined — as one merely working on an engine. To Jones, the science of the technician is a part of every activity in the filmmaking process as seen in this chart. For him, "it surely is justifiable to extend its meaning to include the application of art"(Jones 16) as art directly connects to the narrowest definition of the scientists' purview. As seen in this flowchart, the work of engineers interacts with every aspect of the motion pictures process, including artistic endeavors once thought distinct from the technicians' work. Thus, the pursuit of engineering mandates participation in a vast array of activities, as science and art ultimately mix freely in this medium.

Jones returned to the same point again but in a more authoritative way in his "Presidential Address" at the 1925 SMPE conference. Previous efforts to open the SMPE to other types of film practitioners continued to fail, and Jones declared: "We should be interested not only in the production of pictures which are better technically (that is from the standpoint of photographic and mechanical quality) but also from the standpoint of literary, dramatic, and moral character" (Jones 14, 1926 "Presidential Address"). Jones believed that the SMPE needed to go beyond technical matters and directly focus on other parts of the filmic process to create a better

product, as all are linked in the larger cause of creating greater "literary, dramatic, and moral character." To do so, Jones suggested continuing its efforts to strengthen international ties, reflecting the worldwide development of the motion picture industry: "Efforts towards standardization in our own country have been fairly successful, but in an industry of such world-wide distribution national standardization is not sufficient. We must have international standards. We are in continuous communication with the English, French, and German motion picture groups, and a start towards international standards was made at the Sixth International Congress of Photography held in Paris last July" (11).

Jones also wanted to recruit other film practitioners into SMPE, questioning even the organization's name: "I sometimes feel that the very name of our society, including as it does the word 'engineers,' discourages from joining a great many men who really should be members and who would both benefit by association with us and bring valuable contributions to the organization. We have not been able apparently to interest sufficiently men in the production and exhibition branches of the industry. There is little doubt that many people working in these fields should be drawn into the organization" (12-3). A better understanding among the various practitioners could only better their work as well as the resulting final product: "Anything that will produce a closer co-operation between the producer, director, art director, lighting engineer, laboratory man, camera man, projectionist, distributor, and all those who at some point contribute to the production of a picture will react to the ultimate benefit of the industry and hence to the ultimate benefit of every individual connected therewith" (14). Moviemaking, as Jones pointed out, is a collaborative process, and he believed that the SMPE should pursue a better understanding of other practitioners' work. He did not see further opening the membership and discussions of the SMPE as a betrayal of its original mandate but rather as a better way to fulfill it, using the same "arts and sciences" phrase in place at its founding: "I point out again that the statement of the object of our organization as found in our constitution is that we are supposed to contribute to the advancement not only of the theory and practice of motion picture engineering, but also to the allied *arts* and sciences" (15). With this, in his last address to the SMPE, Jones ends his tenure as president embracing the engineers' duty to both. He embraced the burgeoning film engineer's aesthetic — the belief that their science interacts with art as part of filmmaking and that they themselves could play a critical role in its artistic development. Jones believed their work served a greater purpose than the limited one of an engineer servicing machines, and this passion drive such men to find a greater purpose in their work and the medium they served.

At a 1926 conference, K. C .D. Hickman, then the chairman of the membership committee, weighed in less delicately than Jones on the same matters. He began his presentation by summarizing the SMPE's history when addressing the organization, once again using biological terms: "You started with a small membership but in two years your numbers were doubled. You were born a healthy ten-pound baby and without ever decreasing in weight you grew to strong childhood putting on flesh nearly all the time until you have reached your present sturdy stature" (Hickman 309). Like Jones, Jenkins, and Hubbard before him, Hickman declared that film was a growing, biological entity but he wonders how this "baby" could further develop. As

an engineer himself, he knew attention to the finest detail remained critical to the Society's work and to the individual engineers: "There are those amongst us, myself included, to whom a slight excess of graininess, projection flicker, travel ghost, or falsity of tone, is a disaster affecting us to insanity. . . ." (313). Any failure of technique or technology during production could render shots too flawed for final films.

This pursuit of quality through standardization was the SMPE's original mandate, but a decade after the organization's founding, Hickman believed that this goal required members to focus on matters beyond the mere technical. As he spoke to the SMPE, he declared that engineers could no longer only look at narrow technical issues: "(T)o the great warm hearted public these things are trivialities compared with whether the music is good, whether it is dark enough to hold hands, whether the poor heroine will marry the rich stock broker, and whether or not 'drink' films shall be banished from the motion picture screens" (Hickman 313). Hickman mocks the strained attempts of other members to aggrandize matters of film science in a burst of rare humor recorded in *Transactions*, as he gave this parodic introduction of a typical paper at a SMPE conference*:* "Mr. President and Gentlemen, since Leonardo de Baptista Porta first threw a picture of his maternal grandmother on the wall of a Camera Lucida, and since the first humble moving picture of the Zoetrope, the motion picture industry has grown from the provision of a few nickelodeons to the education and entertainment of seventy-nine countries throughout the world. I, therefore, make no apology, Mr. President and Gentlemen, for introducing my present subject 'An Improved Varnish for Sprocket Wheels'" (316). Hickman believed the engineers must embrace larger, more conceptual and, frankly, more important concerns than pure technical matters:

> [T]he Society is becoming concerned with subjects less and less deserving the title of engineering, and a time will come when we must seriously question the relevancy of our programs. My personal opinion, for what it is worth, is that we should by all means widen our interests. If we are to progress we must be worrying over the most vital problems of our parent industry. Before mechanical standardization was accomplished the need for such standardization was undoubtedly our most vital concern. Now we must go further afield. . . . Our critics may reply that however important these things are they are not our *business*. Again I join issue. What we need is perspective. Concentrating on the part we must be aware of the whole (313).

To move the organization onward, he declared the SMPE's original mandate of standardization accomplished and that the Society must move past limits placed on their concerns in order to remain relevant. As practical solutions, he suggested taking a "militant attitude" (322) and moving some meetings to the West Coast so that more producers located there could attend. He also believed that non-engineers should be made full members, not just heard as invited guest speakers. His next idea, one echoing and furthering the earlier address from Jones, proved more controversial: "Another thing which holds us back is our name Motion Picture Engineers. Cut out the word Engineers and shorten it to some more comprehensive

title such as the Motion Picture Society; we should then not frighten away many of the people we wish to attract" (322).[6]

Open disagreements are rarely recorded in *Transactions,* but challenging the use of the name *engineer* prompted one during the Q&A following the address. Some articles in *Transactions* record a few questions after a presentation, and these are generally dry, technically-oriented inquiries, taking less than half a printed page. Hickman's address, however, prompts six pages of printed discussions. In the Q&A, F. H. Richardson, a founding member of the SMPE and then on its board of governors, flatly rejects Hickman's call to broaden the idea of engineer and widen the membership body, declaring, "I don't think we should change our name and include the movie stars" (322). Dr. C. E. K. Mees of Eastman Kodak states that "(w)hile I find Dr. Hickman's suggestions interesting and stimulating, I disagree with them almost from beginning to end. . . . I do not agree with Dr. Hickman that any change in the name of the Society is necessary" (324–5). Although the Society did not remove the word "engineers" from its name, Hickman's philosophy won out as the membership and the SMPE's invited speakers from other areas of the motion picture industry increased. At the May 1929 conference, the membership committee reported: "Two years ago, we were faced with the choice between remaining a small relatively unknown scientific society or becoming a large internationally known technical organization. We have chosen the latter course; but this choice carries great obligations" (Cowling 115). By this 1929 conference, the membership included a range of film professionals, including industry executives and managers, camera operators, cinematographers, theater owners, projectionists, and distributors (Porter 25-6). The SMPE was by then broadly represented internationally with its 385 U.S. members outnumbered by the 485 international members from the British Isles, France, Canada, Germany, India, Australia, Russia, Sweden, Japan, Holland, and Switzerland.[7] Sales of *Transactions* were 1,134 from Oct. 1, 1928, to April 30, 1929; of those copies, 316 were shipped to foreign countries. As SMPE Secretary E. S. Burnap noted, these subscriptions demonstrated the international appeal and reach of their Society (Burnap 109-10). In this new philosophy, engineers need to embrace a broader discourse not only to serve their science but also film's art, a striking new aesthetic for the technicians.

On October 22, 1930, a diverse group of film practitioners reflecting this international and professional variety gathered for a SMPE banquet at the Pennsylvania Hotel in New York City to celebrate the recently founded Academy of

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[6] To buttress his argument, Hickman cites Jones in the Q&A following his provocative address: "With regard to types of papers, we have taken Past-President Jones' interpretation of the word 'engineer' and have tried to include on the program 'anyone in the industry concerned with the advancement of motion picture engineering and the allied arts and sciences.' Whether this is desirable is a matter for discussion." It was indeed discussed (319).

[7] Emblematic of this shift both to international film workers and to professions other than engineering is the appearance in the member rolls, in the publication of the conference of September 24–28, 1928, of English director Alfred Hitchcock (*Trans. SMPE* 12.36).

Motion Picture Arts and Sciences.[8] In his "Banquet Speech" to a group including not only member engineers but also producer Jesse Lansky, Motion Picture Producers and Distributors of America President William Harrison Hays, actor John Wayne, and Soviet director Sergei Eisenstein (an engineer himself), SMPE President John Crabtree of Eastman Kodak declared the SMPE's embrace of this new aesthetic belief: "Our Society contains about 1,000 members having diversified interests and qualifications, including research scientists from the universities and industrial research laboratories, practical engineers from the factories, studios, laboratories and theaters, and executives from all branches of the industry" (1931 "Banquet Speeches." 223). Though the SMPE did not explicitly reject the term "engineer," the members embraced an expanded conception of it, realizing that exposure to other specialists would help them in their own service. Crabtree states: "I am afraid that the term 'engineer' has, in the past, frightened a number of otherwise eligible persons from joining our Society. We interpret the word to apply to anyone who contributes to the building of a motion picture, so that there is no reason why those who contribute literary, dramatic and artistic talent should not become members of the Society, as well as those who direct the business of production and distribution of motion pictures" (1931 "Banquet Speeches." 223-4). He continued that engineers had no monopoly on understanding film as a medium: "Few persons realize the complexity of the motion picture organism, which is dependent for its existence on more of the arts and sciences than any other industry with which I am acquainted" 224). Film, as "the motion picture organism," not only needs this blend of art and science to thrive but also survive, all due to the distinctive nature of film as an entity comprised of so many parts. Hays closed the banquet by saying: "A true art form is a living, growing thing" (238), echoing once again this belief of film as living and evolving, revealing a philosophy not restricted to the engineers.

This banquet, with its geographically and professionally diverse guests, reveals how the organization then embraced the two critical components of the film engineers' new aesthetic. Firstly, they perceived film as a complex force, the assemblage of arts and sciences, a mixture that plays a critical and distinctive role in its existence. Secondly, the engineers came to view the model for the development of film, as well as of their organization, as something akin to biological evolution but through a "mechanical evolution" in which engineers played a vital role. For the SMPE and its engineers, standardization was the means, the goal, and ultimately the underpinning of their new aesthetic, as they saw their science as filling a central role in filmmaking and its development. Their desire for standardization also led them to consider areas far beyond their previous scientific boundaries. To fulfill their scientific code, they came to include discussions that extended far beyond their initial areas of concern, both conceptually and geographically. Their craft, once centered on purely technical concerns, evolved, and with that, so did film. This vision of expanding the discourse of the SMPE, once controversial with some members of the organization, prevailed as the Society itself evolved along with

[8] As Transactions ended in 1929, the SMPE begin publishing a journal as opposed to a conference proceedings — the Journal of the Society of Motion Picture Engineers (hereinafter J. SMPE).

living film. That at once humble and mighty phrase, "arts and sciences" — recorded in the bylaws in a sparsely distributed conference report of a small group of largely American-based engineers in 1916 — now had worldwide, headline status in the name of the industry's own creation, the Academy of Motion Picture Arts and Sciences, born of the merger of five crafts (the art of actors, directors, writers, and producers coupled with the science of engineers).

Filmmaking as both a practice and an industry thrived with the complex fusion of a multitude of artistic talents and scientific abilities. Cecil B. DeMille, addressing an SMPE banquet in 1928, spoke of both the importance of the engineers' work and how critical it was to incorporate it into the efforts of other film practitioners and the Academy itself: "There is no firmer foundation than science. There is no industry more dependent than we are today, upon science. There is no industry more dependent upon unity than we are today, and no more perfect means of acquiring that unity than the realization of Mr. Mayer's dream, the Academy" (1928 "Speeches Presented" 20). Thus, for DeMille, the Academy is a reflection of this new aesthetic of the engineers, an organization that embodies the philosophy developed within the SMPE. Academy Secretary Frank Woods, speaking to the SMPE at an April 1928 conference, said the same in a more understated fashion: "Considering that the Academy has been in existence less than a year and that it is founded on a theory of unity, the combination of several branches of an extremely diversified industry, an undertaking quite unique in itself, it would appear that the success thus far attained is such that the industry may feel well satisfied and encouraged for the future" (Woods 29). Wood's "theory of unity" about the Academy embraces film as art *and* science, the merger of the work and talents of its stated constituent members, but with a foundation, as DeMille noted, of science. As noted in the introduction, when speaking to the SMPE in 1928, DeMille discussed in detail a single shot from *King of Kings* that mandated the coordination of 22 departments (including such specialists as director, scenario writer, art director, costumer, and actors, including hundreds of extras) and multiple cameras: "If you have a great big set, the number of cameras is important because sometimes, if you have, we will say, 200 or 300 people in the set you are working in, you use as many as 14 cameras on one scene, to take your close-ups and long shots at the same time with different lenses" (DeMille 302). Allison, writing back in 1918, had struck a similar note: "The real need of the industry is *team work*, not grand stand *play*. No one man can know it all nor take the credit for it all" (Allison 11). Those 14 cameras functioned as a unit together to capture the action, and be configured precisely both in position and settings to do so, for all those shots to be incorporated during the editing process.[9]

Used properly, continuity editing with intercut shots can create a sense of seamless action in a space from a variety of distances and angles, all potentially utilized by filmmakers to emphasize desired portions of the filmic action. All this effort in production (such as for DeMille's above reference scene) would be for naught without the ability to intercut those shots with seemless ease, thus allowing

[9] It's around this time that filmmakers begin to speak of what will later be called the "180-degree rule." It is worth noting that, by placing all cameras on one side of the imaginary 180-degree line, you ensure that no camera focused on the action can film another one.

for audience immersion despite shifts in camera-as-spectator position within the profilmic event. In the same article, DeMille, as I noted in the introduction, continues on to discuss the effectiveness of cutting from a medium shot to a close-up during a fight (302). He argues that such editing creates a psychological impact upon the audience, one created through cutting together properly filmed material. Standardization facilitates the production of such intercutable footage, and the resulting impact comes from editing in post-production. Furthermore, having such footage placed considerable control in the hands of those in the post-production process.

In this way, the SMPE's central goal of standardization had a direct impact on motion pictures — it aided the development of continuity filmmaking, an aesthetic model of filmmaking embraced by the film industry worldwide that relied heavily on work done in post. Members of the SMPE reported on film technologies and practices overseas. In 1918, for example, *Transactions* members reported on new color film technology advances in England, France, and Germany, and these reports would grow in depth, both by their own thoroughness and the continued development of international film practice. The engineers desire for information grew as they developed an international discourse and as the evolutionary process developed worldwide. By 1926, these reports in *Transactions* multiplied in number and depth, as the SMPE created a specific committee devoted to tracking such developments. The SMPE that year would report on new technology and its use in many more countries, including France, Germany, Vienna, Italy, Brazil, Australia, Switzerland, and Japan, referencing diverse subject matter from underwater cameras to new sound speakers. Staiger also notes the development of international cooperation on technical issues, such as in 1925 discussions on film stock that included consultations with English, German and French interests (536). In a similar fashion, the SMPE membership also rapidly began including not just foreign-born member but those who continued to work there as well. In addition, the foreign members were not only engineers. In just one example, Alfred Hitchcock of British International Pictures appears on the membership list in the *Transactions* for the September 24-28th, 1928 conference.[10] He also is listed as being part of the 1928-9 Reciprocal Relations Committee/ London Section in the May 6-9th, 1929 *Transactions*.[11]

By attempting to develop worldwide standards for camera practices and technology, engineers helped create a filmmaking system where matching footage from multiple cameras could be intercut and still preserve audience immersion. Furthermore, international crews could also far more easily work together. Continuity editing requires an exacting discipline of technique and technology both in the manufacture of equipment and in its use on the film set, and the engineers' efforts toward standardization provided the foundation necessary for this process.

The Concept of the Living Film

Transactions as a publication evolved along with the industry it discussed. In 1930, the SMPE began publishing the conference reports as The Journal of the Society of

[10] Vlm XII, Number 36, Page 892.

[11] Vlm XIII, Number 37, Page 251.

Motion Picture Engineers. They also distributed this new journal more widely and regularly to its expanding membership, and also, for the first time, allowed non-members to purchase it was well (Crabtree 4-5). In addition, as filmmaking technology evolved, so too did their discussion topics. The vast majority of their issues in the early 1930s, for example, were devoted to sound. The SMPE developed as an organization as well, changing its name and stated purview in 1950 to the Society of Motion Picture and Television Engineers (SMPTE). Film evolves from a worldwide petri dish, fed by the combined force of artistic and engineering "mutations." If something in film works, be it in ways artistic, commercial, or technical, it is noted, copied, and thereby reproduced, like a living entity, in its own Darwinian way. Filmmakers struggle to this day with the medium's aesthetics — what makes a great film and how to create one — just as the earlier practitioners did.

In his 1928 address to the SMPE, Watson discussed his own artistic struggles with the then-uncompleted *Fall of the House of Usher* (1928). Despite all the wondrous advancements of technique and technology, better equipment does not necessitate better filmmaking. As Watson put it, a great film seemingly demands advanced technical practice and yet it can be free of any such presence: "You think of camera tricks as essential…. You decide to play any number of tricks on time and space. Then you remember that the worst picture you ever saw had all of this and nothing else; that every possible trick was invented the same year as the camera; that ideas have nothing to do with art and that there are too many ideas anyway" (Watson 217). Ultimately, developing standards for technique and technology does not enhance filmmaking by itself but it does often offer artists greater control and potential for greatness because of that. The engineers came to discover that their scientific work had a critical role in the medium's evolution by providing practitioners more artistic command over their creation, much of it taking place during post-production.

The lifeform of silent film would in turn give birth to another living entity and new life form, as SMPE president Crabtree declared in the first edition of the *Journal of the Society of Motion Picture Engineers: "*The engineers had been working diligently, however, and in 1927 presented to the industry a new medium for expression, namely, sound, which when wedded to the silent motion picture gave birth to a new art form which, if it has not already done so, is destined to overshadow the stage, the novel, and the short story" (Crabtree 3). Film would continue to evolve, now according to Crabtree into a new species, and its technicians would note their role in its development, but rarely with such flourish as its founding engineers did. Yet, underlying their work lay this provocative belief — film was alive, and the engineers served not merely machines but a living entity.

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Conclusion: The Aesthetics and Establishment of Analog Post-Production

The concluding chapter will discuss this dissertation, analyze diegetic camera films in reference to the points raised here, and explore some recent developments in post-production. This dissertation examined the emergence and establishment of analog post-production during the transition to sound. I analyzed how the analog post-production system cannibalized the nascent post-production process of silent film, whereby the image from the filmmakers was combined with non-standardized sound produced live in the theater. Multiple forces at the theaters asserted influence over a film's presentation. Exhibitors, for example, created a de facto form of post-production by altering films to suit scheduling strategies, local tastes, and aesthetics. Following the ascendance of analog post-production in the American studio system, a shift began to take place with the introduction of sync sound. In this system, a standardized film could be created from heterogeneous visual and audio elements, recorded at different times and in different spaces, and presented via a print with a soundtrack. This process favored the invisible — the denial of labor conducted by specialized workers — via the seamless continuity editing of sound and image. Film scholars have long made the point that post-production, specifically continuity editing, conceals labor and technology. Indeed, this is the premise on which film theory of the 1970s is based. Most scholars approached this issue by analyzing the finished product, the film "text." I have intervened here to study the actual work of, and discourses produced around, post-production itself. I argue that the introduction and codification of analog post-production had a profound impact on filmmaking as well as on exhibition. Certainly, aspects of post-production, especially sound, editing, and effects work, have been analyzed in detail by a number of scholars. I attempted to discuss analog post-production as a process in its entirety and during its establishment. For example, I focused on live musical accompaniment as a form of post-production rather than exclusively as a matter of exhibition. I examined the language and philosophy of engineers who worked during a moment of significant technological change linked to the expansion of post-production work on films. I looked at transitional practices (the monitor man) that were rejected as post-production practices became standardized along with the visual and narrative conventions of the "talkie."

Changes to Exhibition and Production due to the Emergence of Analog Post-Production

During the silent era, numerous other personnel, such as musicians, projectionists, and censors, could intervene in a film's final form both before and during exhibition. I maintain that such variability in the exhibition of films was the silent era's version of post-production, whereby audio and visual were combined live for the audience in the theater. After the standardization of synchronous sound and, with it, analog post-production practices, it became more difficult for exhibitors to edit, alter, or manipulate a print without damaging the print or destroying continuity. Cutting, censoring, or otherwise changing a print with a soundtrack typically introduced distortions in the audio track and would be noticeable when played to an audience, thus impacting audience immersion. In addition, during the sound era,

projectionists could no longer manipulate the speed at which a film was projected (as was common practice during the silent era), as doing so would distort the sound or (in the case of Vitaphone films) alter its synchronization with the image. As Chion points out, the arrival of the synchronous sound standardized projection speed at 24 frames per second. Thus, the transition in post-production practices elevated the role of some artists (such as editors), eliminated or reduced the intervention of others (including the theatre musicians and projectionists), and created a potentially more controlled structure to finalize a standardized film for exhibition (one in which sound was married to the image). Part of the creative work done in post-production that influenced the exhibition and reception of a film (and hence its aesthetic) moved from the space of the theater to the editing room, and I maintain that this remains an understudied issue in film history. I argue that this era saw a fundamental change in who, where, and how films were created.

Regarding changes to film production, the introduction and codification of analog post-production also made a distinct impact. Kevin Brownlow maintains that the sync sound era also necessitated the standardization of camera speed. In his article on speed in silent Film, Brownlow notes that the popular Bell and Howell 2709 cameras ("the standard studio model of the 1920s") did not possess a frames-per-speed (fps) indicator, and operators could only estimate this (Brownlow 166). Brownlow adds that the camera did have a motor available with such a meter, and this version of the device appeared to be more and more commonly seen (and thus presumably used) in production stills toward the end of the 1920s, a sign of the coming of standardization through mechanization during this transitional era (166). Brownlow writes: "So why the motor? Perhaps because of the increased demands of the mobile camera — now far more common — which needed more manipulation than the static camera. And perhaps because a standard speed had at last arrived. In October 1927 *The Jazz Singer* had been premiered, and theatres were being wired for sound. The standard speed of sound films was 24 fps" (Brownlow 167). Thus, the standardization of the motor allowed for a consistent speed in recording and eliminated the human element with regard to camera speed, easing the effort to obtain intercutable footage.

In the silent-film era, camera operators often expressed their own preference for motorized or hand-crank cameras, even if they were working on the same film. For example, Karl Struss and Charles Rosher were the directors of photography for *Sunrise*, and Struss maintains that during filming he would always use a motor and that Rosher would always hand-crank. They never would shoot at 24 fps (the coming sync sound standard), and during the famous tracking shot, they filmed at 16 fps (Eyman 9-10). According to Glen MacWilliams, a camera operator/cinematographer active from 1916 to 1966, operators varied camera speeds within a single scene during the silent era, and doing so was part of the skill and artistry of that position. For him, normal cranking speed was 10 frames a second, but this would vary tremendously as per artistic desires: "Let's say you're shooting a comedy. You started out at 16 frames per second. Then for the chase you dropped down to 8 frames. But it's not that simple. You have to then compensate by cutting the exposure in half. All the while the director is shouting out for me to change camera speed, and I'm having to make all these adjustments" (Tibbetts and

Welsh 185). During this era, technicians also report that production sound recording was also standardized. By 1931, P. Bonneau, the technical director at Paris' Gaumont Studios, reported: "The sound recorder and the camera are driven by synchronous electric motors, thanks to which, one is certain that the two machines will use exactly the same amount of film in a given time" (Bonneau 413). Here we see the regularity and precision of the machine replacing some of the flexibility and judgment of the human, eliminating some artistry of the production worker.

Practitioners have long pursued intercutable footage with which to edit. New demands of analog post-production in the sync sound era altered the production process to obtain such footage. At a 1937 SMPE event, editor Maurice Pivar spoke of the changes sync sound brought to film production by establishing what subsequently would be referred to as the continuity shoot — the filming of an action from various distances and angles. He wrote that such a shooting style in the sync sound era necessitated additional planning and care due to the need to precisely replicate both actions and dialogue when filming an action from various angles in different takes. Of special concern to some practitioners of the era were issues with audible dialogue: "Actors [in the silent era] were directed so that the memorizing of lines was not important. With sound it has been necessary to thoroughly plan and rehearse each scene beforehand. Actors must memorize their lines and directors remain silent during the recording" (Morgan and Shea 115-6). Without such care, editors found it difficult to intercut such footage, and Pivar noted that editors preferred having the option of multiple shot angles when creating a film. This simply afforded them greater control in shaping a film, including the elimination of some recorded material: "It is also a very good expedient for the director from the editor's viewpoint to shoot long scenes from at least two or three angles. This permits the elimination of dialog, if necessary" (Pivar 369). Thus, by possessing such footage, editors and those who controlled the post-production process obtained greater freedom in the creation of the film. To ensure the procurement of the necessary footage, Pivar noted, "Some directors safeguard themselves by overshooting their pictures; that is, they shoot scenes from many different angles, for protection" (369). He preferred such precaution to not possessing enough film for the editing process to shape the final cut.[1]

Practices particularly concerning sound recording changed during this transition. As I explain in Chapter 3, the Monitor Man was a sound engineer who attempted to create a live mix during production of complex sound during the transition to sync sound. As the Monitor Man pursued this goal on the set, so too were developed the earliest forms of analog post-production for this same desire; however, as noted earlier there were severe limitations to the technique and technology during the transition to sync sound. Writing in a 1929 Academy book on recording audio, Albert DeSart, the mechanical director of sound at Paramount-

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[1] Pivar also maintained that sync sound films altered the existing editing grammar by requiring more close-up shots (as well as the reverse shots) so that the "audience may be impressed by the delivery of lines" (368).

[2] Mark Graziano is the Executive Vice President of Post Production at DreamWorks Studios. His lengthy and impressive career goes back to being post-production supervisor on *Se7en*

Publix Studios, maintained that there was at that point a clear movement by practitioners toward the analog post-production scheme as the chief strategy for obtaining complex sound: "In the earlier days of sound pictures, effects such as thunder, waterfalls, sirens, animal noises, etc., were almost always recorded by direct microphone pick-up on the stage." This was the method of the Monitor Man. He continues: "At the present time, however, there is a trend toward the use of dubbed effects and this method will probably be used even more as better libraries of sound effects are accumulated. Studios now make it a practice to transfer all recorded sound effects to the sound library for possible future use; and the sound engineers are even instructed to shoot for this purpose all 'likely' sounds they encounter on location" (DeSart 281). These libraries, used for the addition of "artistic effects," would provide the analog post process with yet another rich source of possibilities, one that of course continues to this day. As early as 1929, filmmakers shifted from relying entirely on sound captured during principal shooting to utilizing audio obtained during after production. DeSart noted that both the Monitor Man and the post-production schemes sought to create a layered and complex soundtrack. Ultimately, practitioners chose analog post-production as the process as it allowed for additional freedom in constructing the soundtrack. At the same time as granting such control to some, the adoption of analog post-production eliminated the intervention of others (such as the Monitor Man).

Speaking at the same SMPE event as Pivar, dubbing mixer Edwin Wetzel noted that by 1937 filmmakers could freely mix a variety of sound elements as they constructed a soundtrack in post-production. He spoke of adding voice and music to a scene to simulate a birthday occurring off-screen, thus creating off-screen space. In another example, he mentions adding sound effects to create the illusion of a storm off-screen (375). In his address, he said that filmmakers came to prefer this technique of adding audio after production as opposed to obtaining it all it once, as the Monitor Man did: "The process was developed shortly after the advent of sound. It was discovered that the necessity of moving the camera from one location to another, and the impossibility of predicting exactly how the picture should finally be edited, made it impossible to maintain a constant level or any semblance of smooth continuity in the added effects or background music if they were recorded at the time the picture was being photographed" (Pivar 374-5). Thus, according to Wetzel, the advancement in duping, dubbing, and mixing allowed filmmakers to construct a more complex soundtrack after production. These efforts further separated the final film from the moment of production as a film's creation resulted from analog post-production. The demands of that system and its product, the soundtrack print, led to substantial changes to both the production and exhibition process. This transition saw a standardization of a film's form and the speed and type of both exhibition and production. The change in post-production systems also eliminated intervention from multiple types of practitioners on the set and in the theater. All served to usher filmmaking into a new era of greater standardization and control.

These changes are yet another indication of the increasingly central role analog post-production came to play during this time period. The continuity system under analog post-production required complex work, and production's role could be seen as providing the material under strict guidelines for elaborate labor done in

that process. Taken in its entirety, this becomes the foundation for the continuity editing system. This is not to say that all films follow this scheme, of course. I would like to discuss one recent subgenre that appears not to do so. Even these films, however, still manage to conceal the work of post-production and preserve its invisibility by manifesting production.

An Apparent Breakdown of This System

The 1990s saw the emergence in popular cinema of what I will refer to as diegetic camera films, popularly known as "found footage" films. With this term, I do not refer to the style of films created from the editing of archival existing footage but rather to the series of fictional narrative films that purport to be filmed by characters within the diegesis. Examples include *The Blair Witch Project, Cloverfield, Paranormal Activity, Diary of the Dead, Quarantine, REC, The Last Exorcism, V/H/S*, and *Project X*. This subgenre represents an apparent break with the long-established analog post-production based system in two ways. First, this genre's narrative conceit typically restricts editing options by limiting (or eliminating) certain shot types such as establishing shots, shot-reverse shots, and (some) close-ups. Second, the films manifest production within their fictional worlds, negating the invisible observer, the typical vantage point of continuity editing. I refer to this genre as diegetic camera films as they place their camera within the diegesis. Utilizing this vantage point, the movies typically seek to deny the very presence of post-production. Indeed, many of these films desire to appear as raw footage and could have been in many cases edited in the camera, a true return to the style of early cinema. Ultimately, these films still seek to immerse their audiences in the depicted drama and to preserve the invisibility of post-production even while (apparently) manifesting production.

An Apparent Change in Shot Vocabulary

In an attempt to deny the presence of post-production, these films typically seek to limit their shot vocabulary. Classical-era filmmakers established an editing grammar comprised of filmed material — from shots taken from different vantage points of an action or setting (coverage) — that was edited together to create a coherent sense of diegetic space. As the diegetic camera film's footage typically arises from cameras held *by* the characters within a scene, viewers see from limited vantage points. For one example, if a character-operator speaks, the shot tends to show only the person spoken to and not the operator, as the operator is placed behind the camera. Some scenes from these films do utilize a limited version of coverage, but rarely feature the full array of shots a typical narrative film shot under the continuity system offers. With regard to audio elements, classical films create the illusion of an entirely sourced soundtrack and thus appear to (or sound as if) they lack any post-audio work such as dubbing, duping, or mixing, other technologies central to the development of analog post-production. In this way, the audio of the diegetic camera films attempt to resemble sound captured during principal shooting, or that once captured by the Monitor Man. In these ways, these films attempt to reflect footage directly shot without any intervention after recording, denying the presence of post-production.

In his book, *Digital Visual Effects in Cinema*, Stephen Prince writes:

> Major traditions of realism—such as Italian neorealism or Dogme 95—emphasized live action and sought to attain a realist design by severely limiting the inflections of style. Shooting on location, using nonprofessional actors, avoiding highly inflected editing, cinematography, or production design — these methods aimed to return cinema to a threshold of articulation that eliminated or reduced the ornamentations of style in the interests of respecting something true about the characters or places being dramatized. Visual effects go in the other direction, away from live action and toward images that are highly designed and that can depart in many ways from camera reality. (Prince 2)

In many respects, diegetic camera films fit into this description of the conventions of realism. To use one example, *Blair Witch*, the film involves a camera crew that shoots on location, features simple cuts, and the overall appearance is so without affectation that is resembles documentary footage, which indeed is the type of film they character/ filmmakers purport to shoot. Prince writes: "Pursuing the relation of realism and visual effects raises issues of indexical meaning, since photographic indexicality is a commonly accepted basis for realism in cinema" (Prince 3). Considered in this context, *Blair Witch* and other such films seeks to establish that same link in pursuit of "realism" and thus deny the presence of post-production.

Despite this subgenre's appropriation of these conventions of realism, diegetic camera films are often worked on extensively in post-production. In addition, rather than denying post-production, they frequently find alternate ways to utilize traditional editing patterns. In one example of how such films alter traditional editing, Heather in *The Blair Witch Project* films herself (as opposed to being shot by an unacknowledged camera operator) directly addressing the camera. She cries and apologizes to her friends and family in the iconic image of the film, but she is in extreme close-up and we see only part of her face. The background is also in darkness, so the viewer does not see details about the location. In one sense, however, this close-up becomes a traditional master shot (something the film largely lacks) as the film shows the only relevant performer as well as her location. This is an extreme close-up, however, and rather than serving to settle the audience in a diegetic space as a typical master shot would, it serves instead to dislocate the spectator from the location. In this way, this could be seen as highly unusual and also quite typical master shot.

Mark Graziano[2], the executive in charge of post-production for DreamWorks on the found footage film, *Paranormal Activity,* compares the tripod-based shots in that movie in a more traditional film: "I don't know if anybody else sees this comparison, but I would compare it to a Jim Jarmusch movie, where you have these long, wide shots that really draw you in. It's really about letting your mind play

[2] Mark Graziano is the Executive Vice President of Post Production at DreamWorks Studios. His lengthy and impressive career goes back to being post-production supervisor on *Se7en* (1995)*, Boogie Nights* (1997), and *Magnolia* (1999). More recent works includes being post-production executive on The Help, Transformers (2007) and Lincoln (2011). http://www.imdb.com/title/tt0175880/?ref_=nm_flmg_pmgr_43

tricks on you" (Graziano).[3] In this way, diegetic camera films merely expand and manipulate the traditional shot patterns and grammar of film as opposed to denying them entirely. Graziano maintains: "Did you ever hear the line that Robert De Niro says, that "You've got to learn all your lines in order to forget them"? In order to be able to act the scene out in an organic fashion? That's one thing to take away from it. So when Jimi Hendrix came along and started playing with feedback, and nobody had ever done that before — was he violating the codes of music? I don't think so. I think he was expanding the range of what's possible in order to create a piece of art" (Graziano). Faced with such an apparent limitation with shot vocabulary, practitioners of diegetic camera films discover ways to appear to subvert conventions, displaying both the power and flexibility of the process. Thus, the films do not deny established conventions but instead subtly alter them. As *Cloverfield*'s cinematographer, Michael Bonvillain, expressed to me, the question he faced on the film was, "How do you tell a story without the conventional film language?" He spoke of the challenge of filming in the "found footage" style: "The language was completely different and so super freeing and at times really hard to figure out but for the most part exhilarating to see it come together and it's so well-done" (Bonvillain). What found footage becomes is a language in film exercise, one that typically seeks to entertain while disguising its post-production. What is striking in these films is their manifesting of production, not any true change in post-production.

An Altered Observer

As for the second point above, I maintain these films display a significant shift in representation by utilizing the diegetic camera. This narrative presence negates the invisible observer. The invisible observer is the vantage point created by analog post-production and the continuity editing system. Bordwell maintains: "For mainstream mimetic theories, each image is attributed to an invisible observer incarnated in the camera; this observer is at once narrator and spectator" (Bordwell 99). In *Narration in the Fiction Film,* he writes that cinema's "classical omnipresence makes the cognitive schema we call 'the camera' into an ideal invisible observer, freed from the contingencies of space and time but then discreetly confirming itself to codified patterns for the sake of story intelligibility" (Bordwell 161). So powerful and distinct is the presence that he argues that classical narration "depends upon the notion of the 'invisible observer'" (161). I maintain that this invisible observer is typically a creature of post-production and absent here due the manifestation of this presence. In "What is Cinema?", Bazin writes that filmmaking frequently creates the "impression we get here from the keyhole is of an invasion of privacy, the quasi-obscenity of 'viewing'" (Bazin 92-3), another model the diegetic camera scheme complicates as now there seemingly is no keyhole or privacy. Instead, diegetic camera films manifest a tangible vantage point in the form of the diegetic camera and often its operator.

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[3] Continuing with my decision to seek firsthand accounts from practitioners, I interviewed practitioners who worked during the transition from analog to digital.

Not only are the camera and operator displayed in the film, but also they are often present in a noticeable and provocative way. Shots in such films often lack in balance and composition (typically adopting a "handheld camera" aesthetic), often reflecting either the emotional state of the operator and/or the unskilled hands of amateur filmmakers. This foregrounds what James M. Moran refers to this as "video's illegitimate status" (Moran xiv). At times, professionals emulate this amateur aesthetic. The camera in *Cloverfield*, for example, appears to be a simple, prosumer one operated by a character (Hud) who is not a professional filmmaker. Bonvillain told me in an interview that he or director Matt Reeves shot 90 percent of the film, with the character/camera operator Hud filming the rest (Bonvillain). In addition, though the film purports to be shot from a simple, prosumer handheld camera, the filmmakers in actuality used multiple, at times professional cameras: "Basically, with the Viper we shot all the first half of 'Cloverfield' — [it] was a pretty advanced camera at the time." He also referred to a number of different cameras used (among them the HVX 200, F23, a handicam, and the Viper), often chosen according to the type of shot that was needed. Though the film seeks to appear to be a recording of a live event, Bonvillain talked of doing 70 takes for certain scenes, such as for during the party for moments at the beginning. Those 70 takes become fodder for the analog post-production system, which remains unseen even as production is displayed. When the film is seen, the moment appears to be the single time it occurred and was captured as such.

The Blair Witch Project and the Production Apparatus

To explore this new aesthetic in greater detail, I will focus on some specific examples from *The Blair Witch Project,* which is an archetype of this still-developing subgenre. The film is embedded in the analog world and was shot on analog technology — both 16mm film and Hi8 tape.[4] In addition, the filmmakers took the rare step of transferring this footage to 35mm for editing.[5] In addition to utilizing such common (if not completely professional) filmmaking equipment, *The Blair Witch Project* also features a traditional horror-film narrative, presenting the story of three young people venturing into the woods and then dying horribly. I argue the film's distinct representational style subtly subverts some of the conventions of classical narrative filmmaking and the fundamentals of analog post-production as established during the transition to sync sound. This film purports to be taken from the "found footage" of three lost and presumed dead student filmmakers who were filming a documentary on a local legend, the Blair Witch. Specifically, the film features a small film crew in a camera operator Josh (Joshua Leonard), sound recordist Michael (Michael C. Williams), and director Heather (Heather Donahue) and appears to result from their filmmaking efforts.

Blair Witch reveals the production apparatus at two levels of filmmaking. As noted above, *The Blair Witch Project* counters previously established norms of traditional continuity filmmaking by placing cameras in the hands of characters

[4] The lone exception is the audio recording device. This was a DAT deck and thus digital.

[5] For a fuller account of this step, please see: http://www.creativeplanetnetwork.com/news/news-articles/behind-blair-witch-project/381616

within the diegesis of the film. First, the viewer witnesses these students film a documentary on the Blair Witch. Second, the students also record themselves filming the material (fig 1 & 2). To accomplish these duel tasks, they utilize two very different cameras — a 16mm and a Hi8. They use the 16mm camera, a well-established camera that records B&W to film, to capture their documentary. For their behind-the-scenes work, *the Blair* Witch crew uses a Hi8 camera, a consumer model that records color images to videotape. The film freely intercuts between these two types of footage, despite their drastically different looks. For example, as they prepare to record footage for their documentary, Josh videotapes Heather, acting as the on-camera talent, with the Hi8 as she applies make-up for her presentation to the 16mm camera (fig 3). The early engineers sought to establish standards for cameras and filmmaking that would preclude a single film utilizing such footage shot by two very different technologies and techniques. Rather than disguising any issues, the film embraces the differences in the footage as it reflects the nature and "realism" of the production.

This scene also foregrounds the rough and at times unskilled efforts of its makers and identifies the film, *The Blair Witch Project,* as a student film, reminding the viewer once again of the film's production. Even the film's full title, which includes the term *Project*, refers to this self-reflexivity — in this case the foregrounding of the film's (illusory) status as an unfinished attempt to make a documentary on the legend of the Blair Witch. Indeed, the film continuously refers to not only the production but also its own flawed nature, further damaging the early engineers' aesthetic goal of the invisible hand of filmmaking from the professional.

Fig 1-2. Above: *Blair Witch* highlights its own production with characters/ filmmakers. Top two shots – production equipment visible as the characters shoot the film within the film. Fig 3-4. Bottom left – Heather puts on make up for a shot of the film within the film, revealing typically off camera activity. Bottom right – an example of the frequent shots of one apparatus by another.

The opening sequence of *Blair Witch* establishes the "amateur" aesthetic of this production. Josh videotapes Heather, who explains in a direct address to the camera why they are going to make this documentary, immediately foregrounding film production. Befitting a young, inexperienced student film crew on a location shoot, these early shots are frequently shaky and poorly framed with only natural lighting. They also display Josh's technical limits as he crudely attempts to focus on her. His camera and thus attention also wanders from her during the shot, reflecting his lack of concentration and interest in her words. In such a (fictional) found footage film, the viewer discovers details about the character of the camera operators from their very use of the apparatus, as shot composition and movement often reveals their mental state. For example, Josh's lack of interest in Heather's work and his lack of respect for her project are indicated by his poor camera work. The very lack quality of the shots establishes important character traits that ultimately lead to disaster later in the film. Daniel Myrick, one of the film's directors, started that "the process of filmmaking is as much a character as the actors themselves, and that was what our goal was" (McDowell 143). Moreover, as noted above, the audience sees less of the characters in this style of film but in this fashion, character development still occurs through film form itself in a distinctive way. In addition, the camera becomes increasingly foregrounded as the image it captures displays the mood and character of its operator.

As the film continues, the filmmakers only grow more worried as spirits increasingly terrorize them in the woods. The shots themselves reflect this torment and fear — they change from reasonably steady and composed in the first reel to shaky and even formless by the second. Late in the film, the viewer sees little as Heather and Michael film as they run through the woods in darkness. While doing so, however, their horror becomes evident from that very lack of coherent visual images. During this flight from spirits, they never even manage to film the entities that attack them, but they do see the spirits with their own eyes. While running, a terrified Heather looks off screen and screams: "What the fuck is that?" Indeed, the

viewer never finds out what she sees as it is remains in off-screen space, so that the question she poses is never answered. Ironically, for a film about a documentary, these filmmakers never show the Blair Witch due to the limitations of the camera's field of view and operator use; here horror and affect negate the image that could produce (spectatorial) knowledge. Rather than a limitation, this becomes central to the film's style and effectiveness. The film takes to an extreme the horror convention of holding the monster/killer in off-screen space for the first act and extends it to all three, so that the monster/killer remains so for the entire film. At times, the film utilizes this lack of visibility to great effect, such as when the characters are apparently besieged at night while trapped in their tent. The limitation of shot grammar in production becomes a creative asset within the post-production process.

Lack of Shot Types — Limits to Space in Diegetic Camera Films

Blair Witch seemingly restricts footage to a camera's singular vision and reduces the diegetic space able to be shown by the analog post-production process. Earlier in the dissertation, I referred to one example of classical continuity filmmaking where DeMille referenced the use of 14 cameras for a single shot in *King of Kings* (1927) (DeMille 302). With carefully set technical specifications and protocols (such as those developed by the early engineers), the footage from all of these cameras became intercutable in post-production. This strategy provided editors with a formidable array of shots to edit together in post-production. In this same 1927 article, DeMille also describes the principle of match-on-action, a powerful film editing technique. For this technique to function, an editor requires shots from different angles of the same action, something *Blair Witch* typically refuses thanks to its narrative conceit. Rarely do both cameras focus on the same pro-filmic event, and thus coverage and the resulting edit utilizing the footage is rare. Such coverage traditionally allows films under the continuity editing system to create depth of field and the power to accent moments. Thus, the film reduces much of the shot vocabulary and techniques of post-production.

Yet, despite these apparent limitations, the film displays interesting variations on continuity editing, revealing the ongoing potency and flexibility of the post-production process. The film, as noted above, lacks traditional master shots, a mainstay in the continuity filmmaking system. *Blair Witch* typically has a character operating the camera from behind the apparatus and thus the three main characters never appear in the same shot. If we deem the Heather close-up mentioned above as not a true master shot, *Blair Witch* arguably has only one. At one point late in the film, Joshua has been captured, leaving behind the other two characters, Michael and Heather. The Hi8 camera rests on the ground and, in a rare instance of videotaping without an operator behind the apparatus, briefly records Heather and Michael packing up the tent (fig 5). This would constitute the single traditional master shot of this film. Another attempt features a shot from Heather capturing herself and Joshua in a mirror (fig 6). Michael is not in frame, however, making this not a proper master shot.

Fig 5-6. ABOVE: Distinctive attempts at master shots in *Blair Witch*. Left — after Josh is taken, a stationary, unmanned camera films Heather and Mike. Right — Heather uses the Hi8 camera record herself and the setting in a mirror. Josh (but not Mike) in the background.

Blair Witch displays a distinctive style of shot-reverse shot, once again creating a variation on the traditional continuity version. For example, Joshua and Heather film each other conversing with their individual diegetic cameras (fig 7-8). This dual camera footage of one filmic event allows the film to cut back and forth between the two angles in their captured footage in a traditional shot-reverse style. Even so, the cameras are in the scene and partially block the operators. As noted above, this scene lacks many shots often used in an edited scene — master shots, establishing shots, two-shots, over the shoulder shots, and close-ups. In general dialogue in *Blair Witch* tends to be presented in simple medium shots. By presenting such limited shots, the audience knows little of what lays beyond the medium shot presented in a conversation, and the spectator has incomplete knowledge of what remains out of frame. Through the use of this apparent limit, the film reinforces its realism.

Fig 7-8. BELOW: Shot-reverse shot, *Blair Witch* style. The film cuts from Josh and Heather using a 16mm and Hi8 filming each other. Post-production then intercuts the footage.

Embodiment of the Camera, Operator, and Spectator

As noted above, Bordwell writes that classical cinema's "omniscient" camera is freed from time and space in its placement within the diegesis. Indeed, he argues that classical narration "depends upon the notion of the 'invisible observer'" (Bordwell

161). In contrast, *Blair Witch* does not free the camera from space and time but rather ties it to the film's constructed reality in three ways. First, character-operators record the footage presented to the audience. Second, the film typically has these operators involved dramatically in the narrative, often in dialogue with someone directly addressing the camera in response. For much of the film, characters directly speak to the camera and/or operator. In addition, their sound is off screen but still sourced, further serving to locate them in the diegesis. As noted above, the camera typically moves somewhat erratically, leaving little doubt as to the presence of the operators. Third, the film at times visually displays the character operators in a matter distinctive to diegetic camera films. They reach from behind the apparatus and into the frame. Such shots attempt to utilize conventional framing elements (such as the presence of a lead character) in their non-conventional presentation (showing a hand only).

Fig 9-12. Above: Four examples of character camera operators placing their bodies in front of the camera and thus into the frame.

A Narrative Framework of Death

The film makes use of the title card, an element of post-production dating back to the film's founding, to manufacture a distinctive sense of "past present" in the first moment of the film. This intervention on behalf of a simple trace of post-production (the title card, as discussed earlier, was an important element of post in the silent era) serves to distance the spectator from the depicted events and to create a sense

of dread. That is, an artifact of post-production creates a powerful framing device courtesy of a simple and single opening panel. Thus, the post-production process creates a meta-narrative based on "lost" filmmakers and "found" footage with the simple introduction of a title card (fig 13).

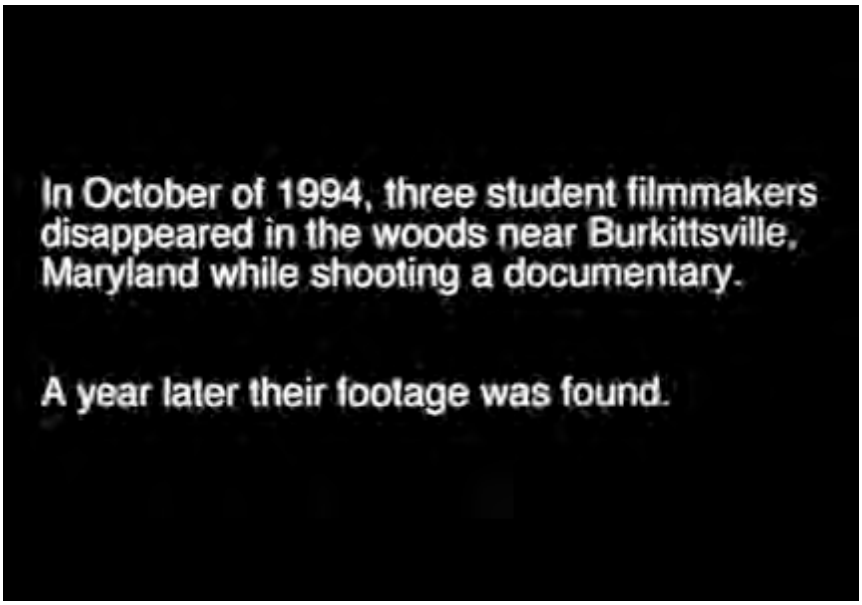

Fig 13. Above: the opening panel of *The Blair Witch Project.*

The narrative meaning of the panel clearly suggests that the "three student filmmakers" are presumably dead — they were lost five years before the film was initially released and their footage was "found" a year after their disappearance, adding to the sense of a partially retrievable past. The font is simple and the panel vibrates slightly, as if reflecting a poorly made credit to go along with the technically authentic inadequacies of the "student" film. Interestingly, this panel attempts to reflect the apparent crudeness of this (apparently) student made film, with post-production further manifesting itself to ensure the illusion that we are watching an amateur film.

Thereafter, every shot, and thus the entire movie, becomes enmeshed with this conceit of this meta-narrative — the spectator watches the long dead. At the same time, the film is of the past, but its diegetic world is overwhelmingly presented as a document of the present. The primary narrative journey of the film becomes the characters' movement in space and time toward their own demise, as spectators know that they view film as "post-mortem" footage. Having announced its protagonists' deaths at the outset, the film simply reveals the torturous "how." Without the deaths of the characters, the film and the finding of the footage lose purpose.

To further emphasize this sense of past-present from the intervention of post-production, I will discuss two other noted diegetic films that utilize the same presentational, meta-narrative concept: *Paranormal Activity* and *Cloverfield*. In *Paranormal Activity*'s opening panel, Paramount Pictures, here the distributor and a proxy for the post-production process, thanks the San Diego Police Department and

the families of the two main characters in the film, clearly implies that the creators of the footage are at the least missing due to presumably dire events involving law enforcement. From this lone panel, the film asserts the presented material speaks for the now missing and presumed dead characters.

Fig. 14. Above: Opening panel to *Paranormal Activity.*

Fig. 15-18. Below: 'Death panels' from the opening of *Cloverfield*.

To emphasize its sense of past present, *Cloverfield* goes to the extreme of using seven distinct panels in its opening, some flashing for mere frames. The opening titles of *Cloverfield* assert the material soon to be viewed was in the possession of

the U.S. Government, specifically the Department of Defense. In pursuit of authenticity, the panels contain government seals, identification numbers, and time code. Furthermore, the information from the titles states that Central Park, a mainstay of New York City life, is no longer, creating another sense of dislocation between this time presented and the spectators' present. Once the film begins, the camcorder footage of *Cloverfield*'s presents a "live shoot" of the film's then breathing characters, but the viewer is constantly reminded that they are in fact dead in his or her present. The opening panels for all three films all enforce the same conceit created via post-production — the footage is real, was found by others, and is all that is available to testify as to the events and the fate of the lost people shown alive in the footage.

All three films connect the destruction of the cameras with the death of the characters. For example, *Blair Witch* ends when the camera breaks, as seen in the frame below. Given their narrative conceit, the only way these films can conceivably end is through the end of "production" itself — thus broken cameras typically end the narrative.

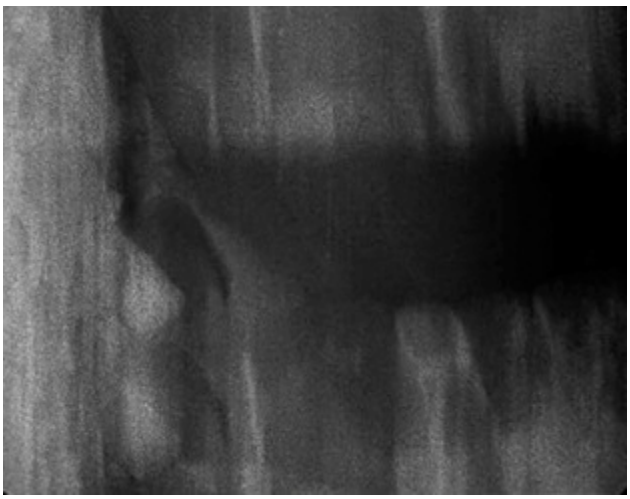

Fig 19. Above: A frame from the blurry last shot of the film from Heather's damaged camera.

In the last scene of *Blair Witch,* Heather finds Michael standing in a corner of a basement, and the film suggests she is attacked from off-frame and collapses, dropping to the ground and breaking the camera. Lying on the basement floor of an abandoned house, the camera simply records a blurred image of the floor or wall as its last image (fig 19). The sound of the malfunctioning camera suggests that it dies along with Heather, and the film's last image plays on for a moment, confirming these deaths. By showing this shattered image, post-production conceals itself by attempting to promote the illusion of its own absence, only to emerge with the closing credits, providing its signature. In some ways, these films once again represent a return to a simpler form of storytelling, one present in early film. *Paranormal Activity*, for example, emerges from a single, often stationary camera on a tripod, where the characters perform directly for the camera, invoking Méliès' aesthetic more than DeMille's.

Even so, the post-production process continues to obscure its full presence. To examine this further, we need only to examine sound. The film contains no readily apparent non-diegetic sound during the feature portion of film. The only music within *The Blair Witch Project* emanates from an on-screen car stereo early in the film. In the introduction, I referred to Belton's argument that typical filmmaking breaks the indexicality between production sound and post-production created sound, but diegetic camera films attempt to retain that bond between the final film and its initial recording. With regards to Michel Chion, this new sound aesthetic greatly reduces any spectator need for synchresis — the audience experiences little difficulty with the synthesis (the connecting of sound to a source) portion of that term as every sound has a clear diegetic source. For its part, *Blair Witch* openly displays its diegetic sources of sound recording — a recording deck usually used by Mike and the built-in microphone on the Hi8. For all appearances, the film's audio is simply production sound, a complete denial of the presence of post-production.

The sound editing process, however, played a major role in the film's final cut. In just one example from the commentary on the 1999 Artisan special edition of the film, the filmmakers explain that they recorded the haunting sound of the spirit children from children who lived across the street from co-director Eduardo Sanchez's mother. In a 2009 interview in *Entertainment Weekly*, director Sanchez relates that the budget to complete the film for the original Sundance screening was between $20,000-$25,000. For distribution, however, considerable post-production work was required, and he reveals the budget for that was $500,000 to $750,000.[6] Sanchez ties the extra cost to shooting a few new endings and a sound mix. Co-director Daniel Myrick also speaks of the extensive sound work: "The mixing people cleaned up a lot of very raw audio and really took the film to a new level." He notes, "We told them to go ahead and add things, but it had to be in keeping with the sensibility of the film. They really understood what we were going for, and so they were able to add background ambient noise like crickets, cracking sticks, wind, and other things that really help the film."[7] As Myrick explains, they sought additional sound work, but any such efforts had to maintain the illusion of post-production invisibility. The role of post-production can also be seen in the effort needed to finish the film. Overall, the film was shot over 8 days but took 8 months to edit as the authorial hand of post-production once again proved largely invisible despite the lengthy and expensive effort. Post-production remains the unseen creative influence upon filmmaking, here foregrounding production in yet another attempt to obscure its own work.

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[6] From 'The Blair Witch Project' 10 years later: Catching up with the directors of the horror sensation | PopWatch | EW.com, , 8/26/2013 2013 <http://popwatch.ew.com/2009/07/09/blair-witch/>.

[7] Behind the Blair Witch Project | www.creativeplanetnetwork.com, , 8/26/2013 2013 <http://www.creativeplanetnetwork.com/dcp/news/behind-blair-witch-project/44043>.

Recent Developments in Post-Production

I would be remiss if I did not discuss more recent trends in post-production. The impact of digital technology, for example, on post-production in the 1990s and onward has been profound and substantial. Technological change is an important factor of this era, much as it was during the transition to sync sound. The introduction of equipment and software such as Pro-Tools and the Avid suddenly placed sophisticated tools for moviemaking in a filmmaker's hands, increasing the control they possessed over filmmaking and the ease of doing so. When I interviewed sound editor Michael Kirchberger, [8] he spoke for nearly an hour about how digital technology had altered post-production since the early 1990s and concluded, "I'm not sure I can grasp the way it does because it is so pervasive" (Kirchberger). The vast impact of digital technology is, however, far beyond the scope of this dissertation.

I would like to highlight two areas of post-production that began when utilizing analog techniques and technology but ultimately proved far more potent with the subsequent introduction of digital technology. Both concern non-linear/ non-destructive editing, long a part of analog post-production. To discuss this, however, I will focus on their use by digital systems, as this is more striking. First, with the introduction of digital post-production computer-based systems such as the Avid, Pro-Tools, and Sonic Solutions, editors were able to access audio and visual elements more readily during the post-production process. Kirchberger, who worked on *Apocalypse Now* (1979), described Francis Ford Coppola sitting with a bank of interconnected VCRs and utilizing them as a primitive Avid. He would fire off various VCRs in a sequence to simulate cuts of the film. Digital technology, particularly the Avid, proved far superior to its analog predecessors with its ability to conduct non-linear, non-destructive editing.

Editor Chris Tellefsen[9] spoke to me of the creative control he felt being able to access instantly the entirety of footage from a film. This is a lengthy quote from the interview, but his words speak well to the impact of non-destructive, non-linear and, in this case, digital technology on film editing:

> GL: I would just think you have access to every shot now, and every half-take, and every botched take, and every 'the camera's on and the actor walks in front of it.'
> CT: You've got everything. Maybe it's a little much; a little too much.
> GL: How has that changed your work (as compared to analog editing work)?
> CT: Well, there's more to go through.
> GL: But is that good?

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[8] Michael Kirchberger's career goes back to *Apocalypse Now* and includes working as the supervising sound editor on films including *The Accused* (1988), *The Sixth Sense* (1999), *Chocolat* (2000), *Adaptation* (2002), *Lost In Translation* (2003), and a film I directed called *Speaking of Baghdad* (2009). http://www.imdb.com/name/nm0456253/

[9] His career includes editor credit on *Kids (*1995) *Flirting With Disaster (1996), Capote* (2005), and *Moneyball* (2011). His first major credit was an assistant editor on *Color of Money*. http://www.imdb.com/name/nm0854403/?ref_=ttfc_fc_cr10

> CT: It depends. It totally depends on the film. I'd say, like on *Moneyball*, it was all great. I mean, we really dug through every inch of it and worked it to the nth degree, and it was all ultimately positive. Well, you're able to analyze every inch of performance. And that goes down to line readings, like checking every line reading for every single line to make sure you have the absolutely most perfect reading…. Philip Seymour Hoffman won an Oscar [for *Capote*] because not only is he a great actor, but we killed ourselves on presenting him to the nth degree. Because, you know, we polished every frame.
> GL: What would be another example of that?
> CT: I would guess, it's hard for me to pinpoint absolutely, but Brad Pitt's performance in *Moneyball*. We just worked it and worked it and worked it and worked it and worked it to get all the nuances to come together.
> GL: How much more possible is that to do in the digital age than the analog age?
> CT: Well, it's access. You can access and compare more easily. So if you have 20 takes of a particular part of a scene or a line that you're feeling like, on this cut, this isn't selling it. I'm not believing this 100 percent. So you go to ScriptTool, and you bang out all 20 options, and you very carefully listen to and look at them. But remember, you're able to see them — instead of, like, the access of analog was, you'd have to go physically from take to take in, not real time, but double-time, or time two, twice… That's where the huge leap is for me — is that you can compare and contrast performance options very, very, very close to one another, in close proximity, so that you can read the nuances more clearly and compare them, and find the strength of that moment more precisely. (Tellefsen)

As Tellefsen notes, such free access to the material does not necessarily create better films and at times becomes a problem itself, but it does lead to greater control in the post-production process. In addition, this style of editing allowing for rapid exploration of possibilities with an edit, something far more difficult with earlier styles that utilized physical film. In this case, he could attempt edits, examine and utilize a vast array of footage, and ultimately create a performance on-screen that simply never happened during filming, as the actor's very appearance moment to moment falls under the control of the editor and the post process to a remarkable degree. In this way, digital post-production breaks the link of the actor's visual performance in the final cut and on the set.

Editor Pam Martin[10] similarly remarked on the ability of digital software to create with comparative ease versions of a film while editing, a task difficult to do under the analog system due to the nature of working with a physical entity: "The digital medium just freed people up to try things for the moment, you know? I'm putting together the first cut of a movie right now, and some scenes I may have four

[10] Pam Martin's editing credits include *Spanking the Monkey* (1994), *Little Miss Sunshine* (2006), and T*he Fighter* (2010). http://www.imdb.com/name/nm0552862/

versions of the scene already before the director's even seen it. Because I can, you know? And it just eliminated the hemming and hawing and the agony of tearing something apart. There's no excuse not to; you can save so much. I think films just got to experiment more" (Martin). Thus, digital post-production allowed for considerable experimentation while editing and virtually an unlimited exploration of potentialities. The creative control and abilities of the practitioners utilizing the digital post-production process grew potentially more formidable in its possibilities. Editor Humphrey Dixon[11] pointed out that this ability to create different versions during digital editing also applied to creating rapidly a variety of final products: "There's no question about it, [editing] is quicker, definitely quicker. Quicker to do different versions, which is sometimes where people get tripped up. The director's version, the editor's version, the producer's version" (Dixon). Freed of its connection to its material form, the process of analog post-production grew into a more nimble digital version and again raised the question of which version is *the* film. Evan Schiff [12] wrote to me of how films will soon be able to be digitally updated even after release: "Once theaters are better networked and download their films instead of receiving them on hard drives, I don't doubt that we will be having theaters download updates to the film the same way you update software currently. I've been on films where, because of staggered release dates, Southeast Asia had to get their prints made before we were able to fix a problem with our VFX. If that scenario happened today, we could send a new hard drive to the theater, and soon we'd just update them remotely when the VFX fix came in" (Schiff). This development raises an issue again from Altman regarding Film Studies' fixation on the ur-film. In "Cinema as Event", Altman argues that critics have fetishized the concept of the "original film" and ignored such variations created by the uniqueness of each exhibition and/or differences in prints, treating the film as an ur-text of sorts (Altman 6). With the use of the new technology that Schiff describes, one that would allow films to be changed during exhibition anywhere in the world, we would need to ask what indeed would be *the* film at any given place or time as post-production could continually recreate its form.

Second, as seen in *The Blair Witch* Project and other such diegetic camera films, recent years have seen the continuing development of sophisticated equipment able to be used by less experienced or less skilled filmmakers to produce potentially professional-looking products. Once again, this is not a simple matter of the introduction of digital technology. Analog versions of filmmaking editing and filming gear, often referred to as prosumer, proved to be effective and practically and economically accessible, but digital technology has only served to expand this trend. Alan Oxman[13] notes that with digital editing, it became far easier and less

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[11] Humphrey Dixon's editing credits include *A Room with a View, Enemy at the Gates, Dancing at Lughnasa*, and *Wimbledon*, http://www.imdb.com/name/nm0228850

[12] Evan Schiff was an assistant editor on *Pan's Labyrinth* (2006), *Star Trek* (2009), and *Star Trek Into Darkness* (2013) as well as an associate editor on *Mission Impossible – Ghost Protocol* (2011). http://www.imdb.com/name/nm0771472/

[13] Alan Oxman's work includes a variety of post-production work, including editing *Welcome to the Dollhouse* (1995) and *Happiness* (1998), working as the post-production

expensive to edit a film, both in terms of finding the equipment and being able to do it: "The actual material to edit used to be much more expensive and much more complicated" (Oxman). He noted this was not a simple transition and occurred in two major stages: "The big digital revolution—there were two. There was the first one where Avid came out, which allowed me and Pam Martin to do that kind of thing [professional editing], and the second, much bigger one was when Final Cut came out. And then it allowed someone who wasn't working on an Avid — [it] was very difficult to get a job as an Avid assistant — the average person who loved editing could just do it." For such practitioners, filmmaking has been democratized as there is great potential for anyone to become a filmmaker now due to access and ease of use of film technology — from the cameras on our phones to the software on our computers with the added bonus of free worldwide distribution over the Internet. Pam Martin notes: "I actually can take my iMac — my brand new iMac, or whatever — and I put an educational version of the Avid on there. It only costs $500. Someone gave it to me, but you can buy one for $500 that actually works." With this cost structure, advanced editing software becomes more readily accessible. Indeed, these changes free post-production from some of its own former restrictions, as now all this editing work occurs in the home and free of expensive and time consuming labs, a true democratization of filmmaking.

The Future and Past of Post-Production

For over a century, professional moviemaking in the American system moved toward specialization of highly skilled and trained workers in accordance with the demands of post-production in increasing complexity and sophistication of the art form. In some respects, we are witnessing a reversal in that trend. A single person can shoot, edit, and release a film at comparatively low cost. Director James Ivory views the current situation as returning him to his personal past of filmmaking and to childhood: "It's also like going back to age 12 where kids decided to make a movie, make some sort of video thing and they shoot their first movies between 9-12, you know, and they do everything.… When I started out, I was a cameraman and the editor and the scriptwriter. I was a bit older than that but I did everything" (Ivory Phone Interview). With modern technology, Ivory said he could film that way again.

My first job in film was as an apprentice editor at the schlock movie factory, Troma, where I enthusiastically spent 12 hours a day working with such now outmoded equipment as Steenbeck flatbeds and trim bins on the fourth floor of a Hell's Kitchen walk-up. I worked as part of a 6 person editing team in doing so. By the late 1990s, as I worked with NYC's Sound One, a lead post house, I came across an enormous storeroom of that same equipment, once the industry standard for decades now sitting idle and gathering dust. In its place were a score of Avids operated for the most part by solo editors.

Digital impacted post-production long before its far more discussed introduction to production. The vast majority of the kinds of work I did as an apprentice editor in the analog system — hanging trims, cleaning film, and building

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supervisor on *Inside Job* (2010), and is currently an instructor at the Edit Center in New York City. http://www.imdb.com/name/nm0654601

reels — no longer existed by the late 1990s. For my most recent film, I worked with one editor, one sound editor, a visual effects artist, and one color corrector for virtually nearly no cost. We created a film without film stock or a lab. In addition, I was never the same room as them when we worked. Post-production, with the rise of the solo worker enabled by computer technology, now obscures its work from others in the same field. When I interviewed current post practitioners for this dissertation whose careers began in the analog era, they state they often miss the camaraderie of those long hours of working as a team, and the physicality, touch, and feel of the actual stock and the chore of handling it, but with respect to editing ease I've yet to meet anyone who wants to go back.

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