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THE MILL

ANALYSIS OF THE ORIGINAL SCORE AND FILM

A Thesis

Submitted to the Graduate Division of the Mary Pappert School of Music

Duquesne University

In partial fulfillment of the requirements for
the degree of Masters of Music

By

Christopher A. Catone

May 2012

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Christopher A. Catone

2012

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By

Christopher A. Catone

April 2, 2012

Lynn Emberg Purse, M.M.
Associate Professor of Music Technology
(Committee Chair)

William Purse, M.M.
Professor and Chair of
Music Technology and Guitar
(Committee Member)

Judith Bowman, Ph. D.
Professor of Music Education and
Music Technology
(Committee member)

Edward Kocher, Ph. D.
Dean and Professor of
Mary Pappert School of Music

Stephen Benham, Ph. D.
Interim Coordinator of Graduate Studies
Associate Professor of Music Education

ABSTRACT

THE MILL

ANALYSIS OF THE ORIGINAL SCORE AND FILM

By

Christopher A. Catone

May 2012

Thesis advised by Professor Lynn Emberg Purse

The Mill is an original film and music performance piece chronicling the history of the steel industry in the United States, with specific connections to Pittsburgh. In addition to scoring the project, I designed the sound and produced the film and music, and also shot and edited the film. About eighty percent of the film material is historical footage (in black and white, as well as color), while I shot the remaining portions, on location, in various areas of the “Mon Valley” region of Pittsburgh. Separated into four distinct sections, the film portrays the rise, the zenith and the eventual collapse of the steel industry in the late 1970s and the early 1980s from its epicenter in Pittsburgh, Pennsylvania.

The musical score is composed of two elements: a live performance ensemble consisting of a clarinet in B flat, a flute and piano; and an electronic soundtrack that

mostly supports the live instrumentation but also, at times, creates ambiguity between what is heard live and what is pre-recorded. I also created the ambient sound design and Foley effects.

The purpose of this document is to closely examine the various stages in the creative process of *The Mill*, to describe the inception of the idea, the implementation of technology and the overall aesthetics of a multimedia production. Although the project was intended to be solely a musical film piece, the final product resulted in an educational quasi-documentary. The document is divided into seven chapters, each describing the techniques and tools utilized to achieve the final product.

DEDICATION

This project is dedicated to the memory of my uncle, the late Michael D'Ambrosio Sr. His many tales of work, life and loss in the blast furnaces at Carrie were the sheer inspiration for my work. *The Mill* strives to capture everything that brought the city and citizens of Pittsburgh through its most glorious times.

ACKNOWLEDGEMENT

I would especially like to acknowledge the zealous support of Ronald Baraff, Director of Museum Collections and Archives at the Rivers of Steel Heritage Area. His historical expertise and unconditional assistance were invaluable in the making of this film. A special thanks is also extended to Ron Gault, a former Carrie Furnace employee and faculty member at Duquesne University.

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The Mill Is Born

The Mill is a film that reflects many memories and experiences in my life and childhood. Born and raised in Swisshelm Park, a neighborhood just within the Pittsburgh city limits, I often spent hours playing with friends in a slag dump in the wooded area behind my street. My uncle, Michael D’Ambrosio, was a former U.S. Steel employee, last stationed at the Carrie Furnace plant, located on the borders of Rankin, Swissvale and Braddock, PA. After returning from playing in those slag dumps, my Uncle Mike would often tell me stories about where the slag came from, what the mills were and his own life experiences there. Many of those experiences were the catalyst for the visual themes prevalent in *The Mill*. His sometimes gruesome tales of hard labor, miserable conditions and dangerous experiences that forever scarred him (physically and mentally), proved to be highly provocative and so my interest in the “steel mills” began at an early age.

Carrie Furnace was, at one time, a major producer of raw “pig” iron for the steel factories in the Homestead Works. Carrie was in operation from 1882 (when the first blast furnace was operational) until its closing by U.S. Steel in 1982. Following that, the site remained derelict until its designation as a National Historical Site in 2006. Since then, the Carrie Furnace site has been maintained and protected by Rivers of Steel, the federal and state-subsidized organization in charge of the preservation and development of the Steel Valley Heritage Area. Admittedly, prior to my knowledge of the existence of Rivers of Steel, I had “illegally trespassed” on the site in order to explore the curiously stimulating images of the rusty, old, by-gone industrial behemoth. I was instantly inspired by the history and the beautifully nostalgic aura surrounding the building,

wanting to somehow link these gorgeous images with the expression of sound and music. After confessing this and my love for the Carrie site to Ron Baraff, director of Museum Archives and Records at Rivers of Steel, Baraff immediately invited me for a guided tour of the site, free of charge. Embarking on this adventure with Sony camcorder in hand, I was awestruck by the stunning sights of the hot stoves, rail cars, steel ladles, the ore yard and other areas of the mill site.

After returning to the historic Bost Building, the offices of Rivers of Steel in Homestead, I shared my ideas for a film project that would cross disciplines of art, film, music and history, while at the same time connecting these disciplines through social and cultural awareness of the heritage of the Steel City. The original concept not only involved the film and soundtrack, but the idea of having live performers playing along with the film, almost in the style of the silent movie theaters of the 1940s. Ron, excited about the prospective project, was more than happy to help in any way he could. He was graciously willing to provide archival footage material for the film. Once I had seen some of this footage, I immediately began sketching visual and musical concepts. And so the arduous work of creating *The Mill* began.

From Sketch to Screen

The Mill is made up of both archival footage as well as footage shot by myself, on site in the Mon Valley and at Carrie Furnace itself. Shooting began in June of 2011 with a trip, guided by Ron Baraff, to Carrie Furnace. I signed a waiver, clearing Rivers of Steel of any responsibility of personal injury at the site and was able to roam freely through the complex's various buildings. All original footage was filmed using a Sony Handycam digital camcorder. I was able to capture many angles of the mill, concentrating mostly on slow zooming and wide, panoramic shots. Some shots were captured handheld, while others were captured stationary using a tripod. Close-ups of a rusty spotlight (Appendix 1), an old gear and a rust-covered saw gave the film some of its nostalgic quality. The close shots also allows the audience to concentrate on color and texture in great detail. Wide sweeping shots of the hot stoves and the two remaining blast furnaces also evoke a feeling of nostalgia and sadness at the loss of something great (Appendix 2). These images are mostly prevalent in the fourth section of the film, titled "The Collapse." In August, I went on another filming run, this time concentrating on the small towns that were once the Mecca of habitation in the Mon Valley. Beginning on the streets of Braddock, PA, I filmed its abandoned storefronts, vacant lots overgrown with vegetation and burned-out buildings marred with graffiti and boarded with plywood. "Eighth Ave. is not what is used to be," says former millworker Archie Coles in the film's narrative soundtrack, "Once the mill shut down, it took 8th Ave. down with it." These shots of the ghost town Braddock served as an introduction to the film, juxtaposing the boom of the town in its iron making hey-day with the empty, lifeless skeleton of its

present life. Shots of Edgar Thompson Works, a steel mill still in operation in Braddock, were used as the opening shot and in other portions of the third section. I also filmed shots in McKeesport, Duquesne and Clairton, PA (none of this footage made it to the final product of *The Mill*).

Once the original filming was completed, the video files were transferred my MacBook Pro running the video editing program *iMovie '11*. Within this software, the images were manipulated in various ways. Using digital filters, the footage could be treated to give it a vintage look (visible in the closing shots of the film's fourth section) as well as to enhance brightness and coloration. Excessive manipulation and visual "gimmicks" were not used because the images could speak for themselves without any type of digital motion editing or the like. Fades and transitions were applied with great care to preserve the "cinema-vérité" style that I was striving for. Some sequences are slowed down or sped up in order to achieve pace in the presentation of the material.

The second step of the film creation process was the editing and manipulation of the archive footage provided by Rivers of Steel. The majority of this footage is public domain and can be found in the Moving Images section of the Prelinger Archives. Black and white material was taken from a few primary sources, mainly: "Steel: A Symphony of Industry" (1936), "The City" (1939) and "Valley Town" (1940). These were short newsreel-like informative films that educated the public on the making of steel in America and the lives of the people involved in the industry (Appendix 3). Additional footage of the Westinghouse Works in what is now Turtle Creek, PA date from 1909, some of the earliest footage ever filmed of work done in a blast furnace. The majority of color archive footage was taken from a publicity newsreel from 1951 called "Open

Road.” This footage contains shots of steel making at Bethlehem Steel in Bethlehem, PA and forms the third section of the film. This is also where many of the bridge-building and iron-working shots were taken (figure 1.5 and 1.6).

Once again, very little treatment or special effects were rendered on the historical footage, remaining true to my vision of an absolute image, one that would express itself without any digital augmentation.

Color footage that appears in the fourth and final section of the film witnesses the demolition of the Homestead Works and specifically the implosion of the blast furnaces at U.S.S. Duquesne Works in Duquesne, PA. These were homemade videos taken by Mr. Renner, used through permission of Rivers of Steel (Appendix 4). This footage, grainy and raw, shows the destruction of what was once the biggest steelmaking complex in the world. These various shots provided the perfect ending for the final chapter in Pittsburgh’s history of steel. The film ends with a slow zoom shot of a railroad rail above the gantry crane at Carrie Furnace.

Themes & Titles in the Film

Once all footage was compiled and edited, it was important to organize the film in a way that would make it aesthetically pleasing and somewhat cohesive in its presentation of visual material. I chose to sequence the footage in a chronological fashion beginning at the turn of the twentieth century and leading up to the 1980s. This chapter of the document will examine, in detail, the titles and themes in the film.

Section 1: Introduction

An opening shot of Edgar Thompson Works still operating in Braddock, shots of the Braddock streets and graffiti-decorated buildings give the viewer the initial ideas of modernity and the changing times. Once the shots of the Braddock storefront segue into the shots of Braddock at the beginning of the twentieth century, the viewer begins to understand how different the environment was then as opposed to the present day. This section serves as a precursor to the beginning of the steel age as well as a glimpse into its eventual fall.

Section 2: Forging A Nation (1875 – 1946)

The second section of the film depicts the whirl and rush of industry. This is the rising action and eventually the apex of steel production in Pittsburgh and throughout the United States. Visual images include shots of steel being poured, cast and sheeted. There are also shots of the smoke and smog, the pollution and the dirt that went along with the production of steel. This portion of the film relied heavily on clips from “Steel:

A Symphony of Industry.” This original newsreel depicted the process of making steel, including the materials needed to synthesize the molten material. Thus, I use the titled clips already in the film (i.e.: Limestone, Coal, Coke, etc.) to illustrate the process. Again, the film, although a purely artistic piece, also serves as a quasi-documentary, providing solid historical fact that complements the musical content.

Section 3: The World’s Furnace (1946 – 1973)

In the third section of the film, color footage is introduced, signifying the transition from early to modern times. With a short prologue, showing the present day images of the deteriorating blast furnaces at Carrie, we hear the voice of a former U.S. Steel foreman describing the layoffs in the 1970s and 1980s due to the outsourcing of steelmaking overseas. This serves simply as a foreshadowing of the events that would later come to pass. The third section then begins with an opening shot of the ore crane in operation at Edgar Thompson today.

By the 1960s, America was booming with new industry. Cities were huge sprawling metropolitan landscapes, their skylines jagged with the presence of soaring skyscrapers. These buildings, along with every other modern structure, were built almost entirely of steel. The rest of this section serves to show some of the uses of steel in what was then the “modern age” and how the American nation was built from it.

Section 4: The Collapse (1973 – 1982)

The fourth and final section contains shots from the “Renner clips”, a set of homemade videos taken in 1989 during the demolition of the Homestead Works, where the present day Waterfront is situated. This includes clips of the former LTV site in Hazelwood, as well as shots of the implosion of the blast furnaces at Duquesne Works. These clips segue into shots of the interior and exterior of the modern day Carrie Furnace, the last standing blast furnace site of its time in this area. These wide-panning shots and close-ups are meant to evoke the sense of loss and emptiness that is what the site is today. In contrast, exterior footage depicting the overgrowing greenery in the area reflects a sense of rebirth and renewal that is going on right now. This renewal is the awareness and appreciation of the region’s rich heritage, culture and history that is still visible today. The final slow-zooming shot is punctuated by the heartfelt and very personal words of former employee Leonard Fleming.

The Live Music & The Soundtrack

Analyzing the musical material in a broad sense, the listener is most likely to distinguish two prominent areas of mood within the piece. Structurally, the piece follows an A-B-B'-A' form. A fast paced, arpeggio-heavy center (sections 2 and 3) is bookended by similar A sections of slow, pensive and sad material. Aesthetically, the music is separated into four movements, respectively, as each titled episode within the film. Sections 1 and 4 (A and the A' movements) are very similar in tonal center, thematic material and both feature solo passages for both wind instruments. Sections 2 and 3 (B and the B' movements) are built on the strident arpeggios of the piano, while the woodwinds serve to accent thematic material and create texture and rhythmic canons with the live piano, as well as interaction with the electronically treated piano heard on the soundtrack.

Sections 1 and 4

Very somber and sustained

The musical score consists of two staves in 2/4 time. The top staff begins with a common time signature (C) and a key signature of one flat (Bb). The melody is characterized by slow, sustained notes with long intervals, creating a somber and pensive mood. The bottom staff provides harmonic support with chords and arpeggios. Dynamic markings include 'subito p' (suddenly piano) and 'pp' (pianissimo).

Figure 1. This above figure in the piano shows the G minor chordal theme that concludes the first section and returns to conclude the fourth section as well.

The theme shown above is meant to evoke the nostalgia of the golden age of the steel industry and it is purposely used at these moments in the film to connect the listener

to the visual aspect of this nostalgia. The woodwinds are heard very clearly in sections 1 and 4 with sustained, expressive lines and parallel movement.

Section 2

The image shows a musical score for Section 2, consisting of two systems of staves. The first system is labeled 'Soundtrack Piano' and features a treble clef staff with a melody of quarter notes and a bass clef staff with a steady eighth-note arpeggiated accompaniment. The second system is labeled 'Piano 1' and features a treble clef staff with sustained chords and a bass clef staff with a steady eighth-note arpeggiated accompaniment. The tempo is 3/4. The score includes a dynamic marking of *f* and the instruction 'Well sustained throughout'.

Figure 2. The second section is built around arpeggiated chords in both the soundtrack piano and the live piano.

A delay effect is used on the soundtrack piano and a phasing effect becomes more audible as the section progresses. This is meant to blur the aural line between what is heard live and what is electronic. Harmonically, this section begins in the tonal area of F major but slowly introduces ninth and major seventh extensions. Whole tone and diminished scales are also prevalent in this section. Texturally it is dense, meant to enhance the images of heavy industry and fast-paced work.

Figure 2. The second section also introduces a “majestic” theme, sustained and expressive, in the flute and clarinet lines.

The above theme is mimicked by the piano in large, clustered chords. This theme reoccurs transformed in section 3.

Figure 3. This figure is the aforementioned “majestic” theme from section 2 that reappears in section 3.

Section 3

This third section is similar to its predecessor in expressing the mood of heavy industry, yet it is not quite as smoky and cacophonous as the preceding section. It begins with a somber passage made up of electronically processed flute sounds and sparse figures from the ensemble. The whole tone and diminished chord progression introduced

during this passage provides the harmonic material for the *allegro* portion of the movement and is augmented over the remainder of this movement. At the conclusion of this passage, the third section begins with swift arpeggiating motion in the piano, reminiscent of section 2, but much more separated and stretched with less rhythmic drive and more of a flowing or unraveling. Again a soundtrack piano is audible, heard in unison with the live piano but slowly morphing into a polyrhythmic texture using delicate delay and reverb effects.

Sound Design & Production

All of the electronic music sequencing and editing was done using *Logic Pro 9*.

The electronic piano sounds were derived from the orchestral samples on the EX24 sampler within Logic. Samples of ambient sounds were also created on the EX24. Delay Designer and Space Designer were used to create the phasing delays used throughout the piece.



Figure 4. Screenshot in *Logic 9* of Space Designer utilized on the soundtrack piano

Assembling and sequencing of the film was done piecemeal, each section being bounced as a separate video file from iMovie, then imported into Logic and scored as such. Once all four parts were completed, the film was combined in iMovie, exported as one file and imported into a master Logic file that would be used to run the live performance. This file contained all electronic, ambient and narrative audio elements, all

bounced down to 4 separate audio tracks. This was done to conserve space in the buffer and avoid a system overload during live playback (see figure below).

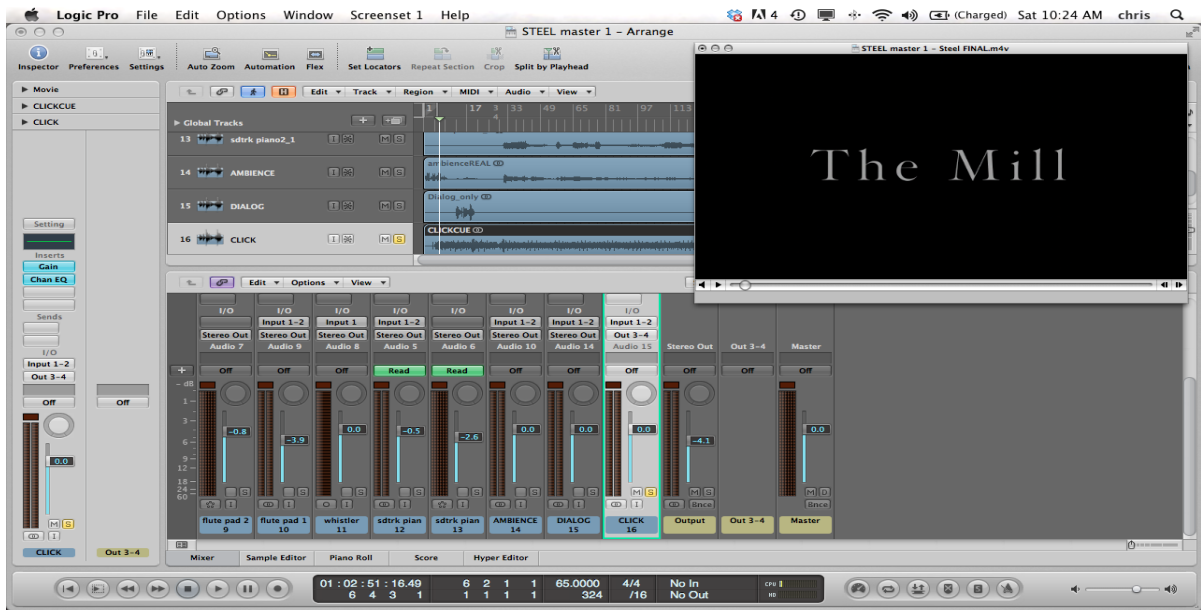


Figure 6. Screenshot in Logic 9 of mixer view. This figure shows the output routing for stereo mix and click track.

Along with composing and scoring the parts for the live ensemble and the electronic instruments on the soundtrack, I also designed the ambient sound, edited the narrative audio and produced the final mix for the piece. The industrial sounds and interior mill sounds were sampled from a vinyl recording called *The Sounds of Steel*, made in the 1940s. Due to the high amounts of crackle and hiss heard on the original vinyl that was digitally captured to disc, the noise removal software iZotope RX was used to digitally “clean” some of these sounds.

In addition to the ambient sounds sampled from the vinyl recording, some sounds were captured using the Sony Handycam microphone during live filming and were used in the final mix of the film (i.e. section 1 when the cars are whizzing past). The sound collage heard in part 2 was first sequenced in a separate file, bounced and then flown into the final playback mix for the film (see figure p. 15).

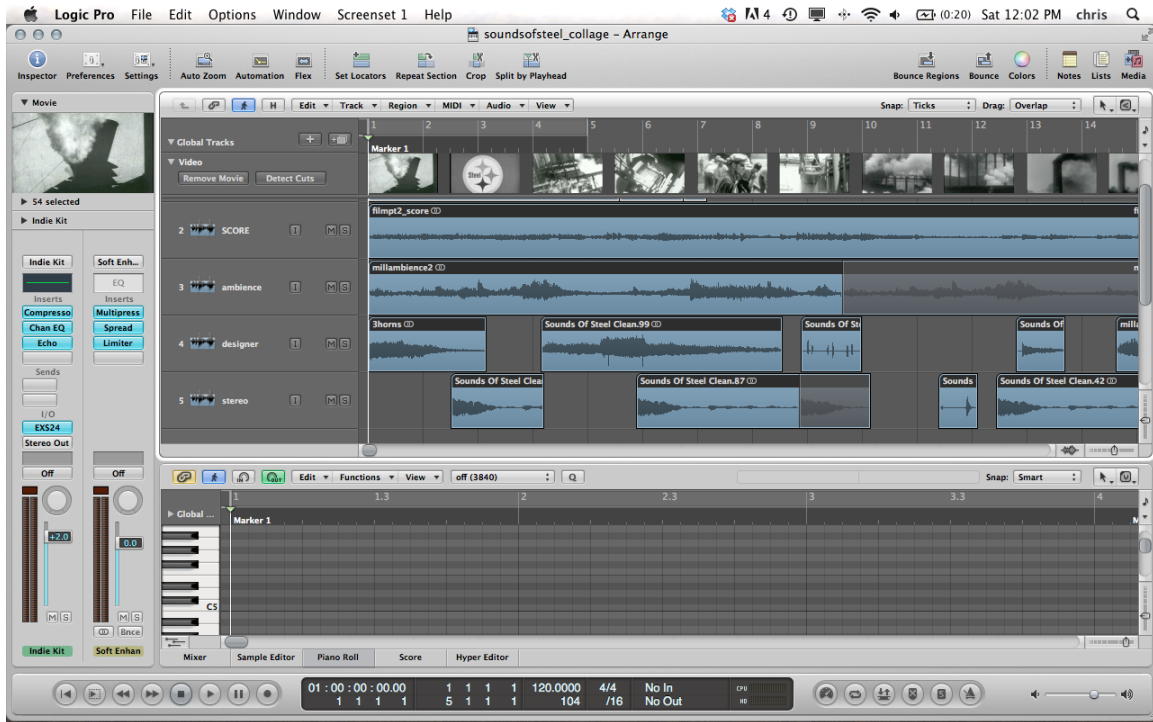


Figure 5. Screenshot in Logic 9 of ambient samples being sequenced, creating the collage heard in section 2.

Due to the fact that live players would be playing along with the soundtrack, it was necessary to create a click track for the playback file. The click track was set on a third channel, apart from the stereo output on channels 1 and 2, and was routed to an outboard headphone mixer with a set of headphones for each individual player. In this fashion, the players would be able to hear the click while the audience heard only the final mix of the film and the live performance. This proved to be quite a difficult task. Syncing the live musicians with the film playback had to be done in real-time and with no margin for error. With this in mind, I decided to run the entire mix and film live through *Logic Pro*, using the built-in video player. The image preferences were then configured to an external source (allowing me to show a non-mirrored image of my computer's display) and shown through a projector onto a screen. The stereo mix from Logic was then amplified through a surround system, built into the recital hall.

Future of The Project

Through the help of Rivers of Steel, I hope to promote the film in the local Pittsburgh film market. Rivers of Steel has already shown interest in a summer performance that could potentially be at the Carrie Furnace site itself. Work is underway on a performance space in the derelict steel mill and is projected to be complete by June 2012. The organization has also shown interest in the purchase of the film for marketing through their Rivers of Steel media shop. In addition to this, Trillium Ensemble (the original instrumental performers of *The Mill*) will include the piece on their summer concert series with subsequent performances following the debut of the film on April 4, 2012 at Duquesne University. I also hope to record Trillium Ensemble in a closed studio session and produce a finished, ready-for-consumption DVD by the end of the summer. My goal is to market the film to local public television and possible performances at art and film events throughout the city. I believe that it would be a viable, commercial product due to its association with local heritage and history.

Conclusion

In the past year that I've spent working on this project, I've learned a great deal in many different areas of media production. An amateur in filmmaking and editing, I had to tackle the task of learning how to use video editing software and how to sync the video with audio. I spent a great deal of time just *thinking* and *sketching* the ideas before I even began to write any music or edit any film. I feel such a strong emotional attachment to the images in this film, and although it is difficult to explain, I tried to evoke those emotions in every facet of the project. This project isn't just a film and music piece, it's a piece about history, humanity and the heritage of the city of Pittsburgh. A story that tells the tragic, yet glorious past of hard working American citizens and their struggle to live in an ever-growing and ever-changing nation. I must admit, the music came last to me. But when it came, it was like a deluge of expression. The ideas immediately came to me, evoked from the images and emotions attached to the film. I tried to harness these ideas into something that could stand alone, but was also augmented by the film. And so the music and the film work hand in hand, one is not of greater importance than the other. With this in mind, I invite you to enjoy my film, *The Mill*, remembering those who worked so hard to build this country into what it is today.

-Christopher A. Catone
Pittsburgh, PA
April 2012

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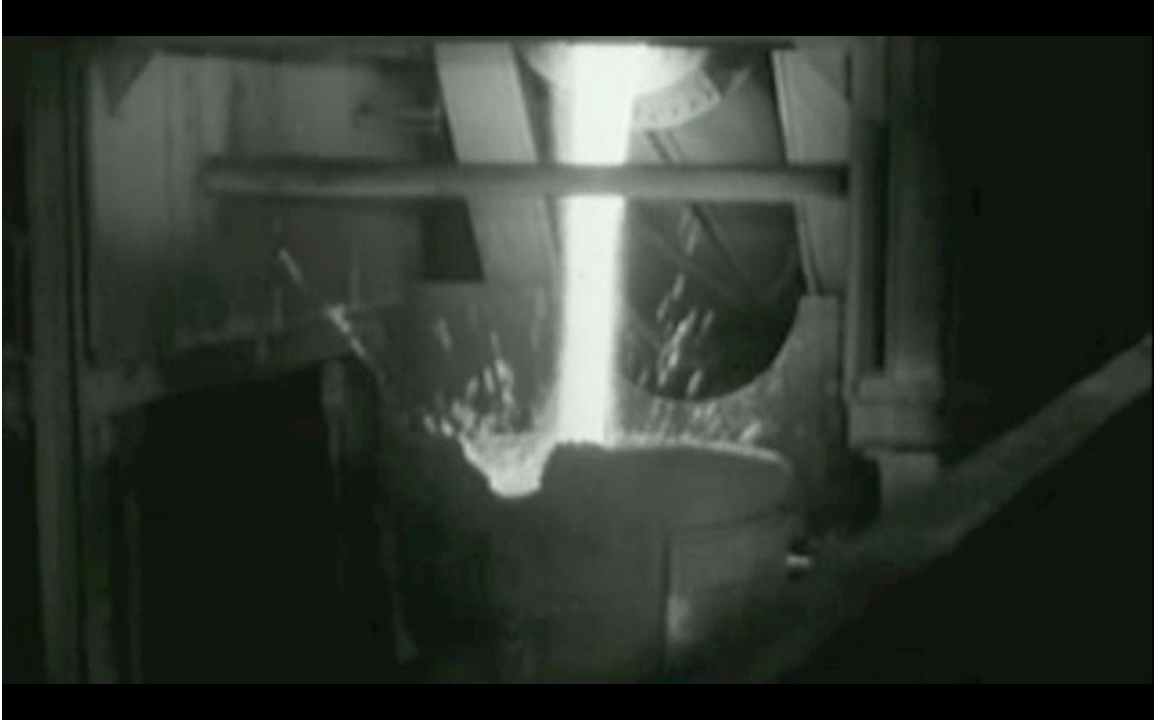
Appendix



Appendix 1



Appendix 2



Appendix 3



Appendix 4