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Approaching Electronic/Acoustic Performance Practice Through Improvisation

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Introduction

This article is the first in a three-part series focused on forming a collaborative electronic/acoustic performance practice. This initial installment discusses electronic/acoustic improvisation and various strategies for approaching electronic/acoustic music-making. The second and third parts will cover strategies for electronic/acoustic notation and instrument design, respectively. The overall approach described is one that combines innovative technology with experimental aesthetics, with the purpose of facilitating new creative opportunities. This series is intended to provide an introduction to the idea of integrating electronic and acoustic instruments in live musical practice. As such, the reader needs no prior background in electronic music or music technology. My goal is to introduce electronic/acoustic music (music involving any combination of purely electronic, purely acoustic, or hybrid electronic/acoustic instruments), to provide you with some strategies on how to approach this practice, to highlight the work and contributions of women in this field, and—hopefully—to spark new interest, inquiry, and exploration.

A Glimpse Through History

It is often emphasized that electronic music is still a relatively new practice. But if we were to trace it back to its origins, we would find ourselves much farther back in time than we might expect. As early as 1626, English philosopher Francis Bacon wrote about the potential he saw for future technology that could create the strange sounds he heard in his imagination. In his novel *The New Atlantis*,[1] Bacon described a utopian civilization centered upon scientific progress and innovation, a land far more sophisticated than that of his own time. Bacon anticipated the development of electronic music and instruments by centuries, describing in great detail what he referred to as "sound-houses." These sound-houses were, in effect, electronic music studios capable of producing and processing new and artificial sounds. They could spatialize sound, manipulate timbre, amplify, echo, and distort sounds in unnatural ways, and even transcend traditional organization of sound by utilizing microtonal inflection and novel tuning systems. Although in Bacon's time these ideas were mere musings, *The New Atlantis* served as a catalyst for great creative and technological exploration in the centuries to come. In the 1960s, more than three centuries later, an excerpt of this text was affixed to the wall of Daphne Oram's studio in the UK—the first electronic music studio to be founded by a woman—providing readers with a reminder of how far electronic music had progressed, and how much uncharted territory still lay ahead.[2]

Electronic music is both old in conception and young in practice. While the musical advancements of the last century are significant and compelling, the technologies we use in music today are still quite new, and their potential has yet to be exhaustively explored. With new technology comes a need for new exploration, discussion, questions, critique, and practices.

Sarah Belle Reid

The phrase "electroacoustic music" most commonly refers to a genre that emerged during the late 1940s and early 1950s from radio broadcast stations in France (*Radiodiffusion-Télévision Française*) and Germany (*Nordwestdeutscher Rundfunk*).[3] It was around this time that magnetic tape recorders were being introduced to these studios to replace disc and steel tape recorders. Although not the original intended use of these tools, technicians and composers affiliated with the broadcast stations (such as Pierre Schaeffer and Pierre Henry in Paris, and Herbert Eimert and Werner Meyer-Eppler in Cologne) started to explore the use of magnetic tape as a compositional tool.[4] Tape recorders gave composers the ability to capture sounds from the outside world—anything from a bird chirping on a windowsill to the sound of water filling a bathtub—and then edit the sounds by splicing the tape by hand.[5] It was not an easy compositional process, requiring hours of painstaking work for only a few seconds of final audio, but for these composers it was a fascinating new world of sound and musical potential.[6] These early experiments led to the formal development of *musique concrète* in France and *elektronische musik* in Germany, two pillars of the electroacoustic music genre.[7] In the 1950s and 1960s, others across the world (Daphne Oram, Norma Beecroft, and Pauline Oliveros, to name only a few) would begin exploring this medium as well.[8,9]

If we fast forward through history to the current day, we can see tremendous creative and technological progress. A far cry from the labor-intensive task of manually splicing together hundreds of pieces of magnetic tape, the equipment we now have to record, edit, and synthesize new sounds has become more accessible, affordable, and portable—facilitating everything in Bacon's sound-houses, and more! Tools that were once prohibitively expensive and too large to move from the studio in which they were installed are now affordable, commercially available, and portable. The technologies we now have open up a multitude of opportunities for electronic/acoustic performance, but in order to take full advantage of them, the divide between electronic and acoustic performance practice must first be bridged.

Bridging the Electronic/Acoustic Collaborative Space

The commercialization and proliferation of electronic instruments has made the possibility of live electronic/acoustic performance far more achievable. Despite these developments, there is still much work to be done to establish an electronic/acoustic performance practice in which electronic musicians share the same presence onstage as their acoustic collaborators. Acoustic ensembles have scarcely begun to explore the inclusion of electronic instruments in performance.[10] But the onus is not on acoustic ensembles and musicians alone: many electronic musicians are still predominantly independent studio artists and solo performers instead of ensemble collaborators.[11] It is easy enough to understand why electronic musicians historically have tended to work in relative isolation: their tools were rare, cumbersome, anchored to a specific location, and often only available to them on temporary loan. But as our technology and tools evolve, shouldn't our creative practice as well? There are a small number of pio-

neering musicians who have explored the integration of electronic and acoustic sound practices for many decades (Micheline Coulombe Saint-Marcoux,[12] Pauline Oliveros,[13] Anthony Braxton,[14] and David Rosenboom,[15] for example), but, on the whole, this practice is still uncommon.

What strategies can we harness to help ourselves bridge the electronic/acoustic collaborative space in our concert halls and music schools? How can we begin to build the foundation for an integrated approach to electronic/acoustic performance practice?

The answers to these questions are not easy—nor is there an absolute right or wrong way to approach them. There are many years of history and established performance practice on the side of acoustic music and instrumentalists, and few years and much less established practice for electronic musicians. Despite this imbalance of established structure—or more truthfully, perhaps because of it—I would propose improvisation to be the best first step in approaching an integrated electronic/acoustic performance practice. There are many different improvisatory traditions and practices, but here I am referring to "open" improvisation.[16] In open improvisation, predefined musical form, riffs, harmonies, and rhythms are abandoned in place of an entirely spontaneous creative process. It is a process that is constantly evolving and in motion, like a conversation: an exchange that involves sharing, discovery, surprise, and most importantly, listening.[17]

Because improvised music of this kind is inherently exploratory and co-creative, there is ultimately no "wrong" way to do it. Like any skill, the practice of improvisation is developed and refined over time, and with practice. But the barrier to entry for improvisation is much lower than it is for a symphony orchestra or a string quartet. It doesn't require decades of formal musical training in order to begin to open your ears and engage in spontaneous music-making. In an open improvisation setting, you are freed from the necessity to execute specific pitches and rhythms, or to fit into a predefined sound world or musical genre. Acoustic instrumentalists are free to deviate from common techniques and to explore unconventional means of producing sound that might lie outside of their typical performance practice. Similarly, electronic instrumentalists aren't limited by a set of restrictions imposed by an acoustic practice they don't fully fit into, and are free to use the full potential of their instruments. We will spend some time getting to know just what this potential entails later on.

We liberated ourselves from necessary controls and developed trust in process through spontaneity.[18]

Strategies for Approaching an Electronic/Acoustic Improvisation Practice

The following points are initial strategies for approaching electronic/acoustic improvisation, or ideas to consider as a way to deepen your current practice. Many of these ideas are intentionally left open-ended, and as such, are intended to be a point of departure for further contemplation and discussion.

1. *Listen deeply and be open*

I want to begin by taking a moment to carefully address the concept of listening, as it is central to this practice. The way that I now incorporate listening into my own work has been greatly informed by Pauline Oliveros's practice of Deep Listening.[19] Oliveros was a profoundly gifted listener.[20] I had hoped to be able to interview her in person for this article, but sadly did not have the chance before her passing in 2016. Like many others, it was through Pauline's writing and the Deep Listening community[21] that I was first introduced to the practice of sonic meditation and active listening.

The Deep Listening practice in many ways resists definition. Much like the spirit of improvisation itself, it is an evolving process—an active experience. Central to Deep Listening is the act of being open to and aware of any and all sounds; learning to expand perception and focus attention, and noticing how every sound affects you physically, mentally, and emotionally.[22]

In approaching a new improvising ensemble, I extend an invitation to explore freeing oneself from predetermined sounds and structure in favor of opening one's ears and mind to receive the full spectrum of sonic possibilities. This may include a short sonic meditation, or an improvisation in which we only use found objects in the room to create sound, rather than our instruments. In this musical practice, active listening becomes just as important as sound-making. Space or "silence" in music is never empty or lacking in interesting material. It is just as charged and full of potential as the sounds produced.

> When I arrive on stage, I am listening and expanding to the whole of the space/time continuum of perceptible sound. I have no preconceived ideas. What I perceive as the continuum of sound and energy takes my attention and informs what I play. What I play is recognized consciously by me slightly (milliseconds) after I have played any sound. This altered state of consciousness in performance is exhilarating and inspiring.[23]

What strikes me about this passage from Pauline's *Deep Listening: A Composer's Sound Practice* is the openness and willingness to accept any sound or idea into the performance space. In many respects, this brings us back full circle to the spark of creative imagination discussed at the very beginning of this article. In the same way, our imagination fuels our development and progress in technology, our unlimited potential for deep listening feeds our improvisational practice. What could the outcome be if we focused our creativity on the act of integrating electronic and acoustic sound worlds through deep listening and improvisation? When we enter into this practice with our ears and imaginations open and receptive, a whole universe of musical possibilities becomes available.

…we had to learn to listen in a new way. We had no plan, no written score, and had no discussion beforehand. We simply improvised, played, and learned…all this was unspoken and simply experienced…[24]

2. *Understand how sound is produced*

In approaching the practice of electronic/acoustic music, it is important to learn and understand the basics of all the instruments in the ensemble. Acoustic instrumentalists have an innate understanding of how other acoustic instruments function: we know a wind player needs to prepare by taking a breath or that a mallet striking a drumhead will produce sound at the point of contact. This knowledge, although rudimentary and

easy to take for granted, enriches our capacity το interact with other musicians in a meaningful way.

As we start to bridge the electronic/acoustic collaborative space, the potential for new and unusual instruments to enter into our ensembles increases. These new instruments carry with them new methods and capabilities for producing sound, some that may be familiar to us, and others that may be entirely unfamiliar. I cannot express enough the importance of collaborative knowledge sharing: ask questions, teach others, be curious! Your own musical practice will flourish as a result. As we discussed earlier, electronic instruments are continuously evolving as new technology is developed and explored. Despite this, there are some fundamental differences between electronic and acoustic instruments that are worth considering as a starting point for your journey.

a) Timbre: The sound of a trumpet can be modulated through the use of mutes and various playing techniques, but on the whole, the timbre of the trumpet remains relatively static. Unless in the hands of an exceptionally gifted player, a trumpet sounds predictably like a trumpet, and is unlikely to suddenly sound like a choir of voices or like inter-station radio static. Many electronic instruments, on the other hand, have a much wider range of timbre variation available (laptop computers, for example, have a virtually unlimited range of sound resources and variability, depending on the software and programming that is utilized). Other electronic instruments such as the theremin much more closely mimic an acoustic instrument in the sense that they occupy a relatively fixed timbre space.[25]

The addition of electronics into acoustic performance has the potential to greatly expand timbre variability. Soprano and sound artist Micaela Tobin is a musician coming from a classically trained background who integrates electronics into her live performance practice. For Micaela, the process of augmenting her acoustic voice with electronics is liberating and cathartic, allowing her to expand her instrument into new textural and timbral worlds.

> The music that I make uses a series of electronic effects pedals, with my operatic voice being driven into those devices, creating a sort of layered soundscape of sound-arias. Most recently, I created an entire opera out of that performance practice with Sharon Chohi Kim…a mixture of extended vocal techniques, traditional opera singing and vocal improvisation, mixed with amplified objects on stage. The amplified objects, which are made with contact microphones, go through distortion and various effects, so it's an interaction between the voice and these objects. We call it an electroacoustic opera.[26]

Even simple amplification has the ability to completely alter the sound of an acoustic instrument, especially if you explore unconventional microphone placement (deep inside the bell of a trumpet, for example) and can be an excellent starting point for electronic/acoustic performance.

b) Tonality and Pitch: On a very basic level, most acoustic instruments are built around specific and fairly narrow tuning systems. With the exception of electronic instruments whose designs emulate acoustic counterparts, such as electric guitars and keyboard synthesizers, many electronic instruments do not adhere to any tonal center or tuning system. Electronic musicians may think of sound in terms of frequency rather than pitch. Electronic instruments have a much wider frequency/pitch range (to the extremes of human hearing, both high and low, and beyond), and they are not limited by semitone organization. This is a double-edged sword, however. For many electronic instruments, playing in a certain key or tonal center is very difficult, if not impossible—in the absence of a more traditional user interface (common MIDI keyboards, wind controllers) or a pitch quantizer, this is sometimes simply not what the instrument is designed to do. As such, it may be beneficial for the ensemble to focus on musical elements other than pitch and tonality, like register, timbre or texture. Over time, the ensemble will develop an understanding of the role and capabilities of each instrument, and the various ways in which they can complement, contrast, and play off of one another.

c) Action, Breath and Gesture: In order for an acoustic instrument to produce sound, there needs to be some sort of action performed by the instrumentalist. Acoustic instruments need to be bowed, struck, blown into, or otherwise vibrated for sound to be produced. In the absence of physical gesture and effort, they lie silent. Electronic instruments, on the other hand, do not require physical effort or interaction to produce sound. As long as they are receiving electrical current, they are in an active state. Interaction from the performer, then, becomes a means of altering or discontinuing the sound. This is a fascinating difference between acoustic and electronic instruments; a fundamental difference in the resting state, and subsequently, the role of the performers and their relationship to the sounds they produce. The following passage is a wonderful way to visualize this difference: "…acoustic musicians can often come to think of silence as a canvas on which they apply their sonic imprint, whereas electronic musicians may learn to think of sound as a block out of which they sculpt."[27]

Experimental electronic/acoustic duo Burnt Dot (Sarah Belle Reid, trumpet, and Ryan Gaston, modular synthesizer)

The main challenge I have encountered in electronic/acoustic collaboration is one of breath and gesture. Acoustic musicians commonly provide extramusical cues to one another: using a sharp inhale to indicate the onset of a new tempo, or a large physical gesture to indicate a change in dynamic or intensity. These gestures not only provide musicians with the ability to anticipate and intuitively understand the direction of the music, but they are typically necessary for the activation of the instruments themselves. Remember, without some physical input to vibrate an acoustic instrument, no sound will occur. Electronic musicians typically have no need for physical gestures of this sort. A loud sound may

not require any more effort to produce than a quiet one, a high sound may be no more effortful than a low sound, and so on. Furthermore, the sounds created by an electronic musician may not have a one-to-one physical gesture relationship at all—one single button press could generate a long cluster of sounds that repeat indefinitely. This disconnect can be challenging in the early stages of collaboration, especially for acoustic instrumentalists who are accustomed to receiving physical cues in addition to auditory ones. The solution to this challenge is one that comes with time and experience. Simply having an understanding of these differences is an important first step, so the entire ensemble can learn to tune into the collective digital and analog breath of the music, forming a new common ground upon which to interact.

d) Sound Source and Spatialization: Acoustic instruments contain their own resonating bodies. When you strike a drum, or play a violin, the sound comes from the instrument itself. With electronic instruments, this may not be the case. Most electronic instruments require external amplification in order to be heard.[28] External amplification leads to a disconnect between the electronic sounds and acoustic sounds—even between the electronic musician and their instruments' output.[29] If this is undesirable, I recommend considering localized amplification that is positioned nearby the electronic instruments, in order to emulate the feeling and directionality of acoustic instruments. That being said, the ability to disembody, spatialize, and pan sounds has significant potential for interesting creative discoveries.[30] Furthermore, acoustic musicians can easily be included in spatialization either by physically moving around the performance space or by amplifying the instruments and sending the amplified sound out through a distant speaker. The main difference here is that the acoustic instruments will always produce some sound at their source, whereas the electronic instruments may not. To refer once again to Micaela Tobin's work, the process of amplifying her voice enables her to reexamine space:

> Working with electronics and being able to disembody my voice, pitch it down, completely change the color, and being able to make it this otherworldly gigantic thing has been very freeing, and I think it's a great thing for vocalists to be able to work with. Also, learning about all the equipment is very useful—I like it as an extension of finding your voice acoustically.[31]

Expand Common Vocabulary

Much of the vocabulary and language we use to discuss music is rooted in acoustic performance practice. It is perfectly logical to use this language when communicating with a strictly acoustic ensemble. However, in an electronic/acoustic setting, I have found it beneficial to employ the following two ideas:

1. Instrument-specific vocabulary should be shared and learned. Much like a brass player learning the vocabulary used by string players to identify various techniques, it is important to know the pre-existing vocabulary to better understand how to communicate musical ideas. This goes both directions (electronic to acoustic, and vice versa).

2. Entirely new vocabulary should be introduced and explored. By "new" I am not referring to invented, gibberish words, but to words that are new or uncommon for use in musical discussion; words that perhaps do not have a traditional function in either a purely electronic or acoustic practice, but can be used to form a new, electronic/acoustic vocabulary. In my ensembles, I particularly like to explore words that pull the performers away from conventional methods of thinking about and organizing sound. The goal behind this is to find new concepts that resonate equally (even if differently) with both acoustic and electronic instrumentalists. For example, if I ask you to consider density and presence as the two primary variable parameters in your playing, you will approach the process of making music in a very different way than if I asked you to consider dynamics and tempo. At the heart of this strategy is the desire to divorce ourselves—even partially—from preconceived notions of our instruments and how they might interact with one another. By doing so, we are better prepared to find ourselves on common ground, and able to build a new, collective experience.

Explore Sound in Multiple Dimensions

One of the most challenging—and exciting—ideas to explore through improvisation is the multi-dimensionality of sound. What's on the other side of a sound? How many faces, angles, and corners does this sound world possess? How deep does it go beyond the surface? These questions, much like the vocabulary ideas from above, are intended to force us away from defaulting into traditional or comfortable modes of thinking about and interacting with sound. Adding electronics to an acoustic ensemble gives us the ability to find new dimensionality within the group, and to broaden our consideration of time, timbre, space, and interaction.

An interesting way to view dimensionality and perspective in sound is through focal and global attention, as described by Oliveros:

> Sounds are both temporal and spatial. As we converse with a partner, there is space between us created by the sound of our voices and the proximity of our bodies….We can hear the dimensions of the space consciously and unconsciously. Our global attention is engaging with numerous overlapping dimensions created by sounds….Focal attention is necessarily limited and specific.[32]

There is, in any given moment, the musical object that occupies your primary field of attention, and everything in your peripheral mind—still in frame, though perhaps not quite as clear. Any one particular sound, gesture, or fellow improviser could occupy your focal attention at any given moment, acting as a stronger gravitational center than the rest of the ensemble. But as the improvisation progresses, you have the ability to shift your focus, adjust your attention, and to push or pull the direction of the group. An even stronger gravitational center may emerge, suddenly shifting your global and focal attention more drastically. You may find yourself abandoning course, settling on a new sonic focal point, or pulling your focus inward and letting the rest of the ensemble slip into a blurry peripheral realm.

Final Thoughts

We have just begun a whirlwind journey into electronic/acoustic music and improvisation—the briefest of tastings of what I hope now seems to be an intriguing world worthy of further investigation. The ideas put forth in this article are not to be taken as dogma, but as points of departure for further conversation and inquiry. I encourage you to explore some of these ideas in your own practice, to keep your ears open, and to experiment with new sounds,

instrument combinations, and sonic possibilities. There is great opportunity in making an effort to further integrate electronic and acoustic instruments in performance practice, in fostering creative environments that enable both types of instruments to be explored in tandem, and in encouraging the knowledge of one domain to enrich and excite the practice of another.

NOTES

[1] Francis Bacon, *The New Atlantis* (Oxford: Clarendon Press, 1915), 42–44.

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[3] Simon Emmerson, *The Language of Electroacoustic Music* (London: The Macmillan Press Ltd., 1986), 10.

[4] Thom Holmes, ed., *Electronic and Experimental Music: Technology, Music, and Culture* (New York: Routledge, 2016), 169–190.

[5] Ibid, 174–176.

[6] Ibid, 48–70.

[7] Nicholas Collins, Margaret Schedel and Scott Wilson, *Electronic Music* (UK: Cambridge University Press, 2013), 15.

[8] Holmes, *Electronic and Experimental Music*, 85.

[9] Elizabeth Hinkle-Turner, *Women Composers and Music Technology in the United States: Crossing the Line* (USA: Ashgate Publishing Ltd., 2006), 21.

[10] Ryan Gaston, "Plays Well With Others: Regarding Modular Synthesizer in Collaborative Performance Practice" in *eContact! 17.4 — Analogue and Modular Synthesis: Resurgence and Revolution* (Montreal: Canadian Electroacoustic Community, 2016).

[11] Simon Emmerson, *Living Electronic Music* (England: Ashgate Publishing Ltd., 2007), 30.

[12] Karin Pendle, *Women & Music: A History* (USA: Indiana University Press, 2001), 375.

[13] Elizabeth Hinkle-Turner, *Women Composers and Music Technology in the United States,* 21.

[14] Nicole V. Gagné, *Historical Dictionary of Modern and Contemporary Classical Music* (UK: Scarecrow Press, Inc., 2012), 45.

[15] Barry Schrader, "Live/electro-acoustic Music: A Perspective from History and California," *Live Electronics* 6 (1991): 91.

[16] Bruce Ellis Benson, *The Improvisation of Musical Dialogue: A Phenomenology of Music* (UK: Cambridge University Press, 2003), 145.

[17] David Rosenboom, *Collapsing Distinctions: Interacting with Fields of Intelligence on Interstellar Scales and Parallel Musical Models* (USA: David Rosenboom Publishing, 2003), 6.

[18] Pauline Oliveros, "Memory of a Community Enterprise" in *The San Francisco Tape Music Center: 1960s Counterculture and the Avant-Garde*, ed. David Bernstein (USA: University of California Press, Ltd., 2008), 80.

[19] Pauline Oliveros, *Deep Listening: A Composer's Sound Practice* (USA: Deep Listening Publications, 2005).

[20] Tara Rodgers, *Pink Noises: Women on Electronic Music and Sound* (Durham and London: Duke University Press, 2010), 27.

[21] "The Center for Deep Listening," accessed March 15, 2017, http://www.deeplistening.rpi.edu/

[22] Ibid, 27–30.

[23] Pauline Oliveros, *Deep Listening*, xix.

[24] Pauline Oliveros, *The Difference Between Hearing and Listening* (TEDxIndianapolis, 2015).

[25] Holmes, *Electronic and Experimental Music*, 18–21.

[26] Micaela Tobin, interview with author, March 2017.

[27] Ryan Gaston, "Plays Well With Others."

[28] Curtis Roads, *Composing Electronic Music: A New Aesthetic* (Oxford: Oxford University Press, 2015), 241.

[29] Scott Smallwood, et al., "A History of Hemispherical Speakers at Princeton, Plus a DIY Guide," in *A NIME Reader: Fifteen Years of New Interfaces for Musical Expression,* eds. Alexander Refsum Jensenius and Michael J. Lyons (Switzerland: Springer International Publishing, 2017), 353.

[30] Simon Emmerson, *Living Electronic Music,* 130.

[31] Micaela Tobin, interview with author, March 2017.

[32] Pauline Oliveros, *Deep Listening*, 15.

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The Triangle Shirtwaist Factory Fire: Turning History into Opera

ELLEN FRANKEL

Writers who compose works based on historical events try to honor two kinds of truth: historical truth, based on facts, such as dates and the particulars of archival documentation; and aesthetic truth, which enables audiences to experience historical events as though they were present at them. To accomplish this double goal, we research primary and secondary sources—archival records, such as newspapers, first person accounts, photographs, transcripts, letters, diaries, and histories—and also plumb our imaginations to create characters, historical or fictional, and scenes to dramatize what happened. If we are sufficiently skilled, our imagined history proves to be even truer than the real thing, because we are able to strip down our depiction to its essentials, distilling the essence out of the raw grain.

In this essay, I describe how one such "imagined history," a chamber opera entitled *The Triangle Fire*, emerged out of its creators' negotiation between historical facts and creative imagination. Much is gained in crafting this kind of a hybrid work. But something is undeniably lost as well. It is up to the audience to determine whether truth is suitably served in the process.

History

On March 25, 1911, a fire broke out at the Triangle Shirtwaist Factory in lower Manhattan, killing 146 garment workers, most of them young Jewish and Italian women recently arrived from Europe. Most of the victims burned to death because the exit doors were locked to prevent worker theft. It was one of the worst industrial accidents in American history. Ten days

The Triangle Shirtwaist Factory Fire, 1911