Kreuzer, Gundula. 2018. *Curtain, Gong, Steam: Wagnerian Technologies of Nineteenth-Century Opera.* Oakland, CA: University of California Press.

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In a recent *Journal of the American Musicological Society* colloquy, "Discrete/ Continuous: Music and Media Theory after Kittler," Alexander Rehding argues that the late Friedrich Kittler's media theory—and its subsequent development by media theorists after Kittler (Sybille Krämer, Bernhard Siegert, Wolfgang Ernst, Jussi Parikka)—has a great deal to offer current musicology (Rehding et al. 2017, 225). Despite criticisms from Geoffrey Winthrop-Young (2002, 832) that Kittler adheres to a form of technological determinism, and focuses too narrowly on the connection between media technologies and the military-industrial complex, Rehding claims that Kittler's media theory can nevertheless help musicologists make sense of the material and technological underpinnings of music and sound.

One such application of Kittler's media theory comes in the form of Gundula Kreuzer's *Curtain, Gong, Steam: Wagnerian Technologies of Nineteenth-Century Opera.* Kreuzer's book is an outstanding example of the productive ways that Kittler's media theory can be applied within opera studies, and more specifically to the integrative multimedia experience of Wagner's *Gesamtkunstwerk* (total work of art). Yet what makes *Curtain, Gong, Steam* such an effective book—and without a doubt this book is truly remarkable for the ways it has changed the way I think about Wagner and opera in general—is that while it is in dialogue with Kittler's media theory, it is not confined by the latter's ideas or methodologies.[1] As Kreuzer states in her contribution to the aforementioned JAMS colloquy ("Kittler's Wagner and Beyond"), Kittler relied too much on Wagner's idealized theoretical writings, and not enough on the material realities of how these operas were realized on the stage (Rehding et al. 2017, 231). As a corrective, Kreuzer aims to present her own media archaeology of the Wagnerian *Gesamtkunstwerk*—a history of the technologies involved in the immersive multimedia experience at the Bayreuth Festspielhaus (230). Kreuzer's book carries out this media archaeology by considering three often-overlooked technologies—the curtain, gong, and steam—which enable her to explore the mechanical aspects that Wagner sought to hide in his theoretical writings. Each chapter examines a particular Wagnerian technology, and each one illuminates some aspect of the relationship of the media involved in the *Gesamtkunstwerk*.

The introductory chapter outlines many of the book's key points. Drawing on Lydia Goehr's (1992) scholarship on the emergence of the work concept in the early 1800s, Kreuzer maintains that the *operatic* work concept expanded over the course of the nineteenth century to include stage technologies and directions, in an attempt to fix these details for future productions. Wagner was not the first to exercise authorial control over the singers and staging details, as demonstrated by the "holistic approach" of his contemporaries Carl Maria von Weber and Giacomo Meyerbeer (12). Yet what made Wagner different from his predecessors was that he sought to make these technologies invisible, for example when he used steam at Bayreuth to hide the scenic changes and create the illusion of continuous action.

Kreuzer's consideration of the curtain, gong, and steam enable her to examine more closely the "intersecting points" (*Schnittstellen*) between technologies—Kittler's term for how technologies come together to create an immersive multimedia experience (17). All three technologies are *multisensorial* and contribute to the overall multimedia experience. A key argument of Kreuzer's book is that Wagner's operas are paradigmatic examples of illusionist theater, which simultaneously relied on advanced stage machinery and realist detail to create the illusion of idealized nature. The technologies of the curtain, gong, and steam are especially important here since they helped veil the essentially mechanical aspects of Wagner's operas, while contributing to the interfacing of the other technologies to create a seamless multimedia presentation. It is for this reason that Kreuzer refers to these three technologies as "Wagnerian" technologies. More so than composers before him, Wagner was able to veil the mechanical aspects of opera production and integrate them to create this immersive experience.

Kreuzer's methodological approach to technology focuses on "composers' visions and the technologies applied toward their realization" (5). In other words, she examines how composers such as Wagner, Meyerbeer, Grétry, and Berlioz implemented specific sonic and visual technologies to accomplish their intentions. In doing so, she concentrates primarily on composers and technologies of the long nineteenth century, in some cases moving up to the present day.

Chapter One interprets the Venusberg scenes of *Tannhäuser* as an allegory of Wagner's "lifelong yet ambivalent pursuit of absolute directorial powers" (30). Like Venus, Wagner sought to enchant his audiences at Bayreuth with a total multimedia experience. That this was a life-long quest for Wagner is reflected in the fact that Wagner repeatedly revised *Tannhäuser* over thirty years, resulting in four different versions. Kreuzer

describes *Tannhäuser* as a "laboratory in which [Wagner] tested those music-dramatic ideas and technological ideas that his later productions would famously seek to deliver openly to the world" (30). More specifically, she interprets the Venusburg scenes as a proto-*Gesamtkunstwerk*, where Wagner first experimented with seamlessly integrating the various media and technologies into a single, all-encompassing experience. For example, Wagner makes the solo singing of Venus and Tannhäuser seem dramatically motivated by what precedes it—a sonic evocation of Venus's grotto and an instrumental depiction of both character's emotions. In other words, the singing seems to flow naturally from the sound and instrumental music, contributing to the overall effect of the immersive experience of the Gesamtkunstwerk. Moreover, Venus's failure to convince Tannhäuser to stay in her grotto foreshadows Wagner's own failure to gain complete control over technology at Bayreuth—a theme to which Kreuzer returns in the epilogue.

Chapter Two discusses the first of the Wagnerian technologies, the curtain. Kreuzer outlines how composers, increasingly aware of the curtain's expressive potential, coordinated its movement with the music and drama. No longer limited to signaling beginnings and endings, the curtain became part of the immersive illusionist experience, especially in the case of Wagner. Far from being just an optical technology, the curtain's careful coordination with music made it a key audiovisual medium for guiding the spectator's multimedia experience. A good example of this is the prelude to *Das Rheingold*, when the curtain guides the spectator's attention away from the music and sound of the Rhine river (136 measures of instrumental music) to the immersive experience of singing Rhinemaidens. Though the coordination of curtain and music existed before Wagner's operas, he fine-tuned the technology to such an extent that he required a custom-made curtain with light fabric, which was opened via a diagonal pull and conic winches. To this day, this type of curtain bears the composer's name: "the Wagner curtain."

Chapter Three explores how the gong's non-periodic vibrations and extended resonance challenged "the boundaries between what was perceived as music and noise," and how the instrument's multiple uses as "music, prop, and machinery" made it an indispensable audiovisual component of illusionist theater (111). Following 19th-century conventions, Kreuzer uses the terms "gong" and "tam-tam" interchangeably, except when referring to specific types of pitched gongs. The chapter outlines the history of the tam-tam's use in Western European opera, providing readers with a rich "historiographic listening" of the instrument's ever-changing semantic and cultural meanings (112). This part of the book is especially rewarding,

because it traces the gong's circulation across cultural and national borders in a way that makes us rethink existing boundaries. For example, the gong first made its European appearance in Britain, where spectators could encounter it in curiosity cabinets, ballet, upper middle-class homes, and the opera house. At opera houses in London, the gong was used as a "tool for rendering the Other, a technology of cultural colonialism" (117).

Apart from its "exotic allure," the gong was also rendered in ceremonial funerals in Napoleonic Paris, simultaneously signifying death and "terror of doomsday" (120). It was this dual connotation of death and fear that shaped the gong's use in French opera, as in Le Seur's 1796 *Télémaque* and Halévy's *La juive*. Finally, the gong evoked "archaic peoples," but not in the geographically specific way of the early British examples (123). Wagner was careful to avoid this association of the gong with primitive peoples, which he thought would undermine the idealist nature of his *Gesamtkunstwerk*. Yet, as Kreuzer points out, Wagner nevertheless incorporated the gong into his sunken orchestra pit at Bayreuth to add color and solemnity to the "ring's dark magic" and "Erda's prediction of the gods' demise"—but in a way that masked the instrument's metallic attack (145). In keeping with the narrative found elsewhere in the book, Wagner transformed the gong from noisy technology to an artistic medium of his illusionist theater.

Chapter Four's discussion of steam is based on Kreuzer's 2011 article, "Wagner-Dampf: Steam in *Der Ring des Nibelungen* and Operatic Production," which was initially my first encounter with her scholarship. As was the case then, what strikes me most about Kreuzer's consideration of steam is the way that she is able to approach a seemingly nonmusical aspect of production to illuminate the sound and music of Wagner's operas. For example, the *Ring*'s fire music reoccurs in connection with Loge and Brünnhilde's rock, and this music becomes an integral part of the latter's scenery. As Kreuzer puts it: "Wagner also captured the *sonic* nature of a crackling and blustering fire" (178). This audiovisual pairing in the musical scenery drives home Kreuzer's larger argument about Wagner's use of technology to veil the mechanical constituent elements of the *Gesamtkunstwerk* in the service of a total immersive experience. Another key point of this chapter is how steam enables Wagner to reconceive the relationship between scenes. In other words, what used to be a transition between two separate, static images (*tableaux vivants*) becomes a single continuous image by means of the application of steam (182). Finally, though Wagner relied on steam to suggest idealized scenes of nature, the mechanical production of steam ultimately betrayed itself during initial performances of the *Ring* through the steam's smell, hissing, and inability to be controlled. Yet, in spite of this, steam took on a life of its own, and it

remains in use as a staging technology to this day.

The Epilogue considers what Kreuzer refers to as the "inevitable failure" of Wagner's *Gesamtkunstwerk*. She writes: "Wagner had tried to advance his technologies to such a degree as to make them appear 'natural'.... Yet even as such they would always remain in the realm of artifice rather than animated life: technology cannot overcome itself" (219). That is, Wagner's illusionistic theater depended on technologies that were subject to malfunction and obsolescence. At the *Ring*'s premiere in 1876, there was the failure of the gas lighting, a broken-down dragon, and the noisy hissing and wafting of the steam engines.

Furthermore, Kreuzer returns to Kittler's argument that Wagner was the great innovator of media storage. The Bayreuth Festival was Wagner's means of preserving his works and their performance for future generations, a type of recording technology prior to the phonograph. Although Wagner experimented with the idea of creating a school for the performance of his works, it was the festival itself and traveling productions across Europe and North America that served this purpose best. Yet, even these were subject to failure, as touring singers became sick and Bayreuth's staging technologies became obsolete.

In summary, Kreuzer draws attention to how Wagner incorporated existing technologies, in many cases from composers and genres that he elsewhere attacked and/or dismissed (e.g., Meyerbeer, *grand opéra*, Rossini). Furthermore, in keeping with her previous monograph, *Verdi and the Germans: From Unification to the Third Reich*, Kreuzer traces the circulation of these materials and technologies across borders in a way that moves beyond existing cultural and political boundaries. For example, the gong first appeared in English opera houses, before making its way to France, followed by Germany. This rethinking of opera and technology beyond borders is what I find most rewarding about her book *Curtain, Gong, Steam*. So often Wagner scholarship focuses on how his operas were used to reinscribe existing national borders and types of national identity (Dennis 2016; Grey 2002).

Curtain, Gong, Steam is an invaluable resource for all opera scholars, especially because it sheds new light on the multisensorial technologies used to create the illusion of a seamless multimedia experience. Kreuzer's account of often-neglected technologies is in keeping with Jonathan Sterne's recent call for an expanded understanding of technology as *technicity* (Sterne 2016)—as we consider not just acoustics, architectural design, and stage machinery design, but also modes of perception, aesthetic motivations, and the interaction of bodies and machines. In keeping with this broader conception of technology, I think *Curtain, Gong, Steam* is best

read alongside several other recent books on opera and technology. Karen Henson's edited book, *Technology and the Diva*, focuses on technologies surrounding the singers, something that Kreuzer's book only touches upon in passing. David Trippett's monograph *Wagner's Melodies: Aesthetics and Materialism in German Musical Identity*—which is also in dialogue with Kittler's media theory—includes a broader consideration of music, sound, and noise in the context of 19th-century Germany. These three books complement existing literature on opera and cinema—for example, on Wagner, see Citron (2000) and Joe and Gilman (2010). When read in tandem with these books, *Curtain, Gong, Steam* offers a highly insightful way of thinking about how sonic and visual technologies interact in the immersive multimedia experience of opera.

Notes

1. A reference point for Kreuzer is Kittler's famous 1987 essay "World-Breath: On Wagner's Media Technology," which makes the argument that Wagner's "music-drama is the first mass-medium in the modern sense of the word," by replacing opera's symbolic order of representation (libretto, musical score) with data streams that "correlate in the real itself to the materiality they deal with" (215).

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