

Cambridge University Press & Assessment  
978-0-521-19806-6 — Technology and the Diva  
Sopranos, Opera, and Media from Romanticism to the Digital Age  
Edited by Karen Henson  
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## | TECHNOLOGY AND THE DIVA

In *Technology and the Diva*, Karen Henson brings together an interdisciplinary group of scholars to explore the neglected subject of opera and technology. Their essays focus on the operatic soprano and her relationships with technology from the heyday of Romanticism in the 1820s and 1830s to the twenty-first century digital age. The authors pay particular attention to the soprano in her larger-than-life form, as the “diva,” and they consider how her voice and allure have been created by technologies and media including stagecraft and theatrical lighting, journalism, the telephone, sound recording, and visual media from the painted portrait to the high definition simulcast. In doing so, the authors experiment with new approaches to the female singer, to opera in the modern – and post-modern – eras, and to the often controversial subject of opera’s involvement with technology and technological innovation.

KAREN HENSON is Associate Professor at the Frost School of Music, University of Miami. She trained at the University of Oxford and in Paris, and her work has been supported by fellowships and awards from the British Academy, the Stanford Humanities Center, and the Radcliffe Institute for Advanced Study, Harvard University. Henson’s research focuses on nineteenth-century opera, singers and opera performance, and opera and technology. She is the author of *Opera Acts: Singers and Performance in the Late Nineteenth Century* (Cambridge University Press, 2015). She is now working on a book about opera and early sound recording.

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*for Steven*

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and, with Heiner Remmert, Robert Sollich, and Matthias Warstat, *Theater als Fest – Fest als Theater. Bayreuth und die moderne Festspielidee* (2010). He is currently completing a book entitled *Opera in Performance*.

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Two chapters in the book have previously appeared in print: Chapter 3 appeared in a longer form in my *Opera Acts: Singers and Performance in the Late Nineteenth Century* (Cambridge University Press, 2015); Chapter 7 first appeared in *Opera Quarterly*, 30 (2014), 93–104, and is reproduced here by kind permission of Oxford University Press. All websites were consulted on or before January 1, 2015.

## A Chronology

Hannah Clancy, David Gutkin, and Lucie Vágnerová

On February 14, 1876, a few hours after Alexander Graham Bell applied for a patent on the first telephone, Elisha Gray arrived at the patent office with a similar design, narrowly missing his chance at history. A late train or the indulgence of a leisurely breakfast may indeed condemn an inventor to obscurity. Such contingencies are heightened by the at times seemingly arbitrary criteria historians use for reconstructing the past. This is the case with the dubious genre of the chronology, and even more so when technology is the subject. Although there is long and distinguished history of thinking about technology in terms of “firsts,” many technological developments resist clear-cut dating (even the Gray–Bell patent debate was far more involved than the story above). A number of recent historians of technology have therefore approached the subject from the perspective of a given technology’s historical, conceptual, and practical preconditions. With these reservations and qualifications in mind, we have tried here to produce a chronology of developments relating to sopranos, opera, and media from across the two-hundred-year time period of this book. In a small attempt to pierce the illusion of objectivity that such a chronology conjures, we have worked in some vivid commentary from the historical figures themselves.

- 1803 Limelight, the first form of spotlight used in opera houses, is invented by Henry Drummond in London
- 1816 The Chestnut Street Theater in Philadelphia is one of the first fully gas-lit theaters
- 1822 Nicéphore Niépce permanently fixes the first image from a camera obscura using a technique he calls “heliography,” in which the dark and light tones of the image are inverted
- 1831 Giacomo Meyerbeer’s first grand opera, *Robert le diable*, is premiered at the Paris Opéra and makes innovative use of gas lighting in the Act III “Ballet des nonnes” (“Ballet of the Nuns”)
- 1837 Limelight is first used at the Theatre Royal, Covent Garden, by the actor and manager William Charles Macready
- 1839 Louis Daguerre announces the invention of the daguerreotype at a joint meeting of the Académie des Sciences and the Académie des Beaux-Arts in Paris. The daguerreotype offers a clearer image than Niépce’s heliography, and the required exposure time is shorter
- 1846 Electric arc lamps (or arc lights) are used as spotlights at the Paris Opéra

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- 1849 Arclight is used to create a sunrise effect during the premiere of Meyerbeer's *Le Prophète* at the Opéra; the effect will be criticized by Wagner in his treatise *Opera and Drama* (1850–51) as one of grand opera's "effects without causes"
- 1850 The Swedish coloratura Jenny Lind travels to America at the invitation of the impresario P. T. Barnum and begins a record-breaking tour of the country, giving nearly 100 concerts and earning over \$350,000
- 1854 The voice pedagogue Manuel Garcia, brother of the sopranos Maria Malibran and Pauline Viardot, invents the laryngoscope, allowing singers to see their own vocal cords for the first time  
 A. A. E. Disdéri patents the *carte de visite* photograph, photographic portraits the size of a calling card
- 1857 Édouard-Léon Scott de Martinville patents the "phonograph," a device that produces an "image of sound" on a soot-blackened glass plate
- 1860 Pierre Petit institutes a series of *carte de visite* photographs of celebrities, many of them of singers and actors
- 1876 Alexander Graham Bell patents the first telephone in the US and in Britain  
 Emile Berliner invents the microphone
- 1877 On November 21 Thomas Edison announces the invention of the phonograph. On December 6 he makes the first recording of a human voice on a tinfoil phonograph cylinder
- 1881 Offenbach's *Les Contes d'Hoffmann* is premiered at the Opéra-Comique in Paris; a setting of three short stories by E. T. A. Hoffmann, it includes a mechanical doll as one of its heroines  
 Clément Ader's "théâtrophone," a system of transmitting opera and theater by telephone, is first publicly demonstrated in Paris, and allows visitors to listen to performances broadcast from the Opéra and the Comédie-Française. The technology is commercialized in 1890, allowing subscribers (among them the novelist Marcel Proust) to listen from the home. Similar systems are developed in Britain, Belgium, Portugal, Hungary, Sweden, and the US, and will continue to operate until the 1930s  
 The Savoy Theatre in London installs the first in-house electrical lighting system
- 1882 Wagner's *Parsifal* premieres at the Festspielhaus in Bayreuth with new stage and set-moving technology
- 1883 Benjamin Falk takes the first full-stage photograph of a theatrical scene (from *A Russian Honeymoon* by Eugène Scribe) at the Madison Square Theater in New York. After the performance, the cast poses in imitation of a tableau from the play's second act
- 1887 The Paris Opéra replaces gas burners with electric lights

- 1889 The Columbia Phonograph Company is founded by Edward Easton
- My intention is to have such a happy combination of photography and electricity that a man can sit in his own parlor, see depicted upon a curtain the forms of the players in an opera upon a distant stage and hear the voices of the singers.  
 Thomas Edison, *New York Times*, 1893
- 1894 Guglielmo Marconi begins experimenting with wireless telegraphy. Within a year he will succeed in transmitting messages further than a mile, and he will secure a British patent for his device in 1896
- 1895 While significant experiments in early cinematography by P. J. C. Janssen, Edward Muybridge, and Jules Marey date back to the 1870s and early 1880s, 1895 marks a pivotal year in terms of the medium's exposure to the public. On December 28, Auguste and Louis Lumière screen short films to thirty-seven people at the Grand Café on the boulevard des Capucines, Paris, including *The Baby's Meal* and *The Arrival of a Train*. Within weeks, audiences number around 2,000 nightly
- 1899 Adolphe Appia writes *Die Musik und die Inszenierung* ("Music and Staging"); the first opera director in the modern sense, he proposes innovations to opera scenery and staging
- 1900 Singers from La Scala begin having portraits taken at Varischi and Artico Company in Milan. The practice continues for two decades
- 1901 Between 1901 and 1903 Lionel Mapleson, the librarian of the Metropolitan Opera in New York, records cylinders of Met performances for private use by family and friends, including recordings of Emma Calvé as Bizet's *Carmen* and Lillian Nordica as Wagner's *Brünnhilde* and *Isolde*
- 1902 Alessandro Moreschi, the so-called "last castrato," is recorded by the Gramophone Company
- 1903 The Gramophone Company records the first complete opera – Verdi's *Ernani* – using forty single-sided discs
- An electrical dimmer lighting system is installed at the Met
- 1905 After having been described by Edison and others as having the voice they would most like to be able to record, the Italian coloratura Adelina Patti finally makes a series of recordings for the Gramophone Company at her castle in Wales. Around the same time other sopranos are being recorded and promoted by the early recording industry, but the first big operatic recording star – and the first big recording star in general – will be the tenor Enrico Caruso
- 1907 Alfred Clark, a New York representative of Gramophone, donates twenty-four wax records, including recordings of the sopranos Adelina Patti, Nellie Melba, Emma Calvé, and Marcella Sembrich, to be stored in lead and iron

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containers at the Paris Opéra and accompanied by instructions stipulating that the containers not be opened for one hundred years. In 1912 a further twenty-four records as well as a gramophone, stylus needles, and operation instructions are added

It will soon be possible to distribute grand opera music from transmitters placed on the stage of the Metropolitan Opera House by a Radio Telephone station on the roof to almost any dwelling in Greater New York and vicinity.

Lee de Forest, the self-styled “Father of Radio,” in a De Forest Company advertisement, 1907

- 1910 The first radio broadcast is made from the Metropolitan Opera, of excerpts of a performance of Puccini’s *Tosca*
- 1917 The Signal Corps Female Telephone Operators Unit is formed. Women were thought to be more courteous on the phone than men and were employed as operators by the US Army for the remainder of World War I
- 1918 The American soprano Rosa Ponselle makes her first test recordings for Columbia Records (formerly the Columbia Phonograph Company), accompanied by the pianist Romano Romani. She will go on to be a highly successful recording artist and a popular performer of opera on the radio. Between 1918 and 1922 the Metropolitan Opera Orchestra also records twenty-five sides for Columbia
- 1920 Pittsburgh-based station KDKA commences what is likely the first regular, pre-advertised radio broadcast. Broadcasts begin in France in February 1922, in Britain in November 1922, and in Germany in October 1923

The progress of modern stagecraft would never have been possible if the designer had not been liberated from the floodlight . . . the instrument of his salvation has been the development of the “spot” – the focusing lens spotlight.

Lee Simonson, pioneering theatrical designer, *Literary Digest*, 1924

- 1924 Marian Anderson records spirituals for the Victor Talking Machine Company. This is the first time an African-American opera singer records for a major American record label
  - 1925 The first electrically recorded phonograph discs are sold
  - 1926 Warner Bros. releases *Don Juan*, the first full-length film with a synchronized soundtrack, though the dialogue is not recorded but provided in captions
  - 1927 Rosa Ponselle makes her first appearance on the radio
  - 1929 Fortune Gallo, an Italian-born opera impresario, produces a full-length film of Leoncavallo’s *Pagliacci*
- Kliegl Brothers Universal Electric Stage Lighting Company introduces the “Fresnel lens” to theatrical production. These lenses were originally developed

for lighthouses; their large, scalloped shape is capable of producing beams of varying sizes and intensities and therefore makes them ideal for spotlighting

Manfrede von Ardenne and Vladimir Zworykin make the cathode ray tubes that will eventually produce television

- 1931 On Christmas Day the Metropolitan Opera is responsible for the first radio broadcast of a full-length opera, Engelbert Humperdinck's *Hänsel und Gretel*  
 Fitz Pfeumer and the Allgemeine Elektrizitäts-Gesellschaft (or AEG) design and produce the magnetic tape recorder
- 1933 The Met begins regular radio broadcasts of complete operas. The first is of Wagner's *Tristan und Isolde*
- 1936 Friedrich Feher composes *The Robber Symphony*, the first opera composed expressly for cinema
- 1937 Berg's *Lulu* premieres at the Zürich Opera. The opera includes a silent film during the Interlude in Act II

One of the most successful of all [the conductor's Leopold] Stokowski recordings was the Paris version of the *Tannhäuser* Overture and Venusberg Music (VM-78). But it was issued in 1930 and much of the passion and sonority of the Philadelphians' memorable performance was lost by technical processes that were then the last word, but are now vastly improved. Here we get the Stokowski reading in its full panoply of dynamic contrasts and glowing orchestral colors.

Advertisement for the Gramophone Shop, Inc., from the company's "record supplement," 1939

- 1940 Victor, the Publishers' Service Co., Inc., and the National Music Appreciation Committee collaborate on a large-scale project. Twelve operas are recorded on over eighty sides and sold at budget prices through newspapers. The recordings were released without naming the performers and conductors (though it is believed that instrumentalists from the Metropolitan Opera Orchestra were used throughout). The records simply state: "Recorded by World Famous Operatic Artists and Conductors"
- 1948 Columbia Records introduces the 33 $\frac{1}{3}$  rpm microgroove record, or "long-playing record"  
 ABC telecasts the opening night performance of Verdi's *Otello* at the Metropolitan Opera; 500,000 homes tune in, prompting the Met to telecast opening nights for the following two years
- 1949 Cetra issues the first commercial 78 rpm record of the soprano Maria Callas. Involving the RAI Orchestra Turin conducted by Arturo Basile, it features "Casta diva" from Bellini's *Norma*, the Liebestod from *Tristan und Isolde*, and "Qui la voce" from Bellini's *I puritani*. Callas will go on to be one of the most prolific and successful recording artists of opera, introducing a new sense of

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“vocal drama” to recordings and contributing to the revival of interest in bel canto in this period

- 1950 Offenbach’s *Les Contes d’Hoffmann* is adapted for film by Michael Powell and Emeric Pressburger to significant acclaim

Recently I had the belated pleasure of seeing your picture “Tales of Hoffmann.” Perhaps you will not mind my writing you a fan letter about it. From my earliest theatre going days I have been a lover of Grand Opera. The physical drawbacks of the average operatic presentation have often bothered me – in fact it is hard for me to remember a production which did not make heavy demands on the imagination. The only satisfactory frame of mind to bring to the theatre was to say to oneself, “Well – you can’t have everything.” Your production of “Tales of Hoffmann” has proven that you can have everything. For the first time in my life I was treated to Grand Opera where the beauty, power and scope of the music was equally matched by the visual presentation. I thank you for outstanding courage and artistry in bringing to us Grand Opera as it existed until now, only in the minds of those who created it.

Letter from Cecil B. DeMille to Powell and Pressburger, 1950

- 1951 On Christmas Eve NBC broadcasts one of the first operas written for television, Gian Carlo Menotti’s *Amahl and the Night Visitors*

The Festspielhaus in Bayreuth reopens after World War II with a production of *Parsifal* by one of Wagner’s grandsons, Wieland Wagner; with its austere sets, psychological symbolism, and innovative use of lighting, the production is later credited with initiating the phenomenon of *Regieoper*, or “director’s opera”

- 1952 Maria Callas signs a seven-year contract to record exclusively for EMI. A bootleg recording of a performance of *Norma* at Covent Garden, with Callas as Norma and a young Joan Sutherland as Clotilde, is widely circulated illegally

When performing in a studio in front of a microphone it takes a little more time to get into the role but not very much more. In making a record you don’t have the sense of projection over a distance as in an opera house. The microphone magnifies all details of a performance, all exaggerations. In the theatre you can get away with a very large, very grand phrase. For the microphone you have to tone it down. It is the same as making a film; your gestures will be seen in close-up, so they cannot be exaggerated as they would be in a theatre.

Maria Callas on making recordings, 1952

- 1955 Luciano Berio and Bruno Maderna found the Studio di Fonologia musicale at Radio Milano. The studio is equipped with nine electronic oscillators; the American soprano and composer Cathy Berberian is referred to as “the tenth oscillator”

- 1956 Philippe Fabre pioneers the technique of electroglottography, the use of electrodes to measure the contact of the vocal cords during voice production



- 1958 Callas records an album of mad scenes for EMI, accompanied by Nicola Rescigno and the Philharmonia Orchestra. The album includes scenes from Donizetti's *Anna Bolena*, Bellini's *Il pirata*, and Ambroise Thomas' *Hamlet*. Later in the year EMI releases its first video recording of a musical performance, which is also of Callas: her *Débuts à Paris*
- 1959 The first installment of the first (stereo) studio recording of Wagner's *Der Ring des Nibelungen* is released by Decca; it is conducted by Georg Solti, produced by John Culshaw, and features Birgit Nilsson as Brünnhilde, Wolfgang Windgassen as Siegfried, and George London and Hans Hotter as Wotan/the Wanderer. Installments will continue to appear until 1966
- 1960 Joan Sutherland records *The Art of the Prima Donna*, a collection of coloratura arias that is still one of the most popular recordings of opera. In the same year, after she appears in the title role of Handel's *Alcina* at La Fenice, she is hailed as "la Stupenda" ("the Splendid One")
- 1967 Odyssey Records releases *Extended Voices: New Pieces for Chorus and for Voices altered Electronically by Sound Synthesizers and Vocoder*, with Alvin Lucier leading the Brandeis University Chamber Chorus in compositions by himself, Robert Ashley, John Cage, Morton Feldman, Toshi Ichiyonagi, and Pauline Oliveros
- 1969 The funeral of gay icon Judy Garland takes place a day before the Stonewall Riots. Garland's and Harold Arlen's "Over the Rainbow" becomes one of the first gay anthems
- 1973 The Metropolitan Opera broadcasts in stereo FM for the first time
- 1975 Ingmar Bergman's film version of Mozart's *Die Zauberflöte* is produced for TV and subsequently screened in movie theaters
- 1976 French director Patrice Chéreau stages Wagner's complete *Ring* cycle to mark the centenary of the founding of Bayreuth as well as the first staging of the cycle. The production causes controversy (and is ultimately highly influential) because of its references to the industrial revolution, which include the Rhine-maidens transformed into prostitutes, Wotan into a frock-coated banker, and the fire used by Siegfried to forge his sword into a nineteenth century-style steam hammer
- 1979 Daniel Odier publishes a novel, *Diva*, about a soprano who forbids recordings of her voice. It is followed in 1981 by an influential film adaptation, directed by Jean-Jacques Beineix and starring Wilhelmenia Wiggins Fernandez

The CHANT computer program is first developed by Xavier Rodet, Yves Potard, and Conrad Cummings at the Institut de Recherche et Coordination Acoustique/Musique (IRCAM) in Paris. Originating in experiments in vocal analysis, it will eventually be used for the electronic synthesis of voices and instruments by composers including Jean-Baptiste Barrière, Harrison Birtwistle, Gérard Grisey, Jonathan Harvey, and Kaija Saariaho



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- 1981 “Video Killed the Radio Star” by the Buggles is the first music video to be shown on MTV, a cable and satellite TV channel dedicated to airing music videos
- 1982 The first compact discs (CDs) are sold
- 1983 Performance artist Laurie Anderson’s eight-hour multi-media piece *United States* is premiered at the Brooklyn Academy of Music. In a number of sections Anderson drastically lowers the pitch of her voice using an Eventide Harmonizer
- 1984 Robert Ashley’s seven-episode television opera, *Perfect Lives*, premieres on Britain’s Channel 4

It’s true that there is a lot of alienation in songs like “Big Science” and “O Superman.” All of my work that deals with machines, and how they talk and think, is inherently critical. That’s certainly the bias. But I think many people have missed an important fact: those songs themselves are made up of digital bits. My work is expressed through technology – a lot of it depends on 15 million watts of power.

Laurie Anderson on technology, 1985

- 1987 John Cage’s *Européras 1 & 2* premiere at the Frankfurt Opera. For this deconstructive opera-history spectacle, Cage uses a computer program (created by Andrew Culver) to partially determine the musical parameters as well as aspects of the action, scenery, costumes, and lighting
- 1988 CD sales surpass record sales for the first time
- 1989 Wearing a tricolore dress by the Tunisian-born designer Azzedine Alaïa, the soprano Jessye Norman gives a performance of *La Marseillaise* on the place de la Concorde, Paris, to mark the two-hundredth anniversary of the French Revolution
- A new home for the Paris Opéra, the Opéra Bastille, is opened; one of the most important features of the auditorium is its acoustically equivalent seats, but the sound quality in the house will be widely criticized
- 1990 Opera-L, an internet discussion group, is launched. The website has to be transferred from a private host to one run by the City University of New York because of the large numbers of subscribers
- 1992 In a production of *Parsifal* by Harry Kupfer at the Staatsoper in Berlin the Flower Maidens appear projected through television screens
- 1993 New York-based journalist James Jorden founds Parterre Box, a queer opera zine. Later in the decade the publication, now presided over by Jorden’s drag alter ego, “la Cieca,” moves onto the web (at parterre.com) and becomes one of the most widely read and influential blogs about opera
- Designed by the Moving Picture Experts Group (MPEG), MP3 technology is publicly released

- 1994 A digital blend of female soprano and male countertenor is used to simulate the voice of the celebrated castrato Farinelli in the film of the same title, directed by Gérard Corbiau  
 The video game *Final Fantasy vi* is released for Super Nintendo. One of the elements of the game is an originally composed opera, *Maria and Draco*, that features 16-bit digital “voices.” In a later release of the game for PlayStation, the “Aria di Mezzo Carattere” from the opera is performed by the Bulgarian soprano Svetla Krasteva
- 1997 Adapting the tools of his trade to the voice, seismic analyst Andy Hildebrand launches the pitch-correcting software Auto-Tune
- 1999 Sound amplification (or “acoustic enhancement”) is introduced by some opera houses, including New York City Opera, then based at the New York State Theater

This development [the introduction of sound amplification] will end the performance of opera as we have known it at its best: the proficient acoustical singer filling, unaided, a large space with well-produced and well-modulated sound capable of balancing a full orchestra and still giving meaningful, nuanced expression to the music. Under the new circumstances, neither singers nor conductors have to know very much about what they’re doing.

Singer and writer Bruce Burroughs, *Opera Quarterly*, 2000

- 2003 Composer, performer, and media artist Pamela Z premieres *Voci*, an evening-length mono-opera that addresses the sonic, cultural, and physical aspects of the voice through a mix of storytelling, operatic arias, extended vocality, and recorded and synthesized voices
- 2004 The soprano Deborah Voigt is fired from a production of Strauss’s *Ariadne auf Naxos* at the Royal Opera House, Covent Garden, for not fitting into one of her costumes, a “little black dress.” The press coverage sparks a debate about the pressures on female (and male) opera singers to conform to popular culture’s standards of body image
- 2005 The video-sharing website YouTube is launched; by the end of the decade it will become a major source of videos and recordings of opera
- 2006 The Metropolitan Opera inaugurates its “Live in HD” series, which simulcasts performances in high definition to movie theaters internationally; similar programs are launched at other major opera houses
- 2007 The mezzo-soprano Cecilia Bartoli releases *Maria*, an album devoted to the figure and repertory of the bel canto soprano Maria Malibran. In 2009 Bartoli releases another historical singer-oriented album, *Sacrificium*, devoted to the castrati of the eighteenth century. Both albums are accompanied by lavishly produced books and DVDs in which Bartoli appears posing as the original historical performers

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Schweizer Radio und Fernsehen (or SRF), the German-language division of the Swiss Broadcasting Corporation, begins experimenting with “prime time” opera programming. Verdi’s *La traviata*, restyled *La traviata im Hauptbahnhof* and performed by the Zürich Opera, is broadcast live from Zürich central train station

- 2010 Tod Machover’s *Death and the Powers: A Robot Pageant* is premiered in Monte Carlo. Developed at the Media Lab of the Massachusetts Institute of Technology, the opera features live singers and a robot chorus
- 2011 *Anna Nicole*, Mark-Anthony Turnage’s two-act opera about the American glamor model and socialite Anna Nicole Smith, premieres at Covent Garden. The production transfers to New York City Opera in 2013 and is the last opera to be performed by the company before it files for bankruptcy