



HOLD THE LINE

THE LIFE, LOVES & INVENTIONS OF
ANTONIO MEUCCI
FATHER OF THE TELEPHONE

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THE
MENTORIS
PROJECT

Francesca Valente

Introduction

The telephone is one of the most influential technological innovations in the field of communications. In the course of history, many individuals claimed to have invented it.

In Europe, Charles Bourseul, Innocenzo Manzetti, and Johann Philipp Reis made their cases; in the United States, Sylvanus D. Cushman, Amos Dolbear, Daniel Drawbaugh, Edward Farrar, James McDonough, Elisha Gray, Alexander Graham Bell, and Antonio Meucci all sought credit for it. It has been proven and now ruled that Meucci was indeed the first to invent the telephone, not Alexander Graham Bell, as most people still believe.

Meucci was a nineteenth-century Italian who was also fluent in French and Spanish. After moving to the U.S. in 1850, he devised a functioning electric telephone and used it daily. Looked down upon by American society in the way most European immigrants were at the time, and not articulate in English, Meucci was unable to defend his rights as an inventor. He always had to rely on an interpreter or a friend to convey the complex theories underlying his brilliant inventions, particularly in the last thirty-nine years of his life, spent in New York.

His nature was that of a dedicated Italian patriot and a compulsive, generous researcher. He put his intuitions and problem-solving abilities to serve society at large in order to improve people's quality of life. He never thought of his research in terms of mere moneymaking, but rather as a way to pursue personal growth and scientific progress. His discoveries were ahead of his time by at least thirty years.

When I was asked to write a new biography of Antonio Meucci and the invention of the telephone, I was afraid I was about to embark on a long, frustrating venture. I would have to examine one of the most corrupt periods in nineteenth-century America and the failings of the U.S. legal system, possibly without even coming close to understanding why it had rejected hundreds of challenges to A. G. Bell's claim to the telephone. I thought it would mean defying the authors of the many books that credited Bell with the telephone invention. The prospect seemed more than daunting.

In Bell's day, courts relied exclusively on pre-trial statements and depositions to establish the facts of a case. Nowadays the American legal system would require Bell to hand over his notebooks, including the incriminating evidence they contained. But these rules were not uniformly applied until 1938. Bell's correspondence and papers only became available after 1976, when they were donated by his family to the Library of Congress, and later digitized. Until then, they had safely remained for over a century in the family's possession, stored in a secluded room at the Washington, D.C., headquarters of National Geographic Society, whose founder and first president, Gardiner G.

Hubbard, was also the *deus ex machina* who, as you will soon find out, maneuvered A. G. Bell's patent in order to successfully present him as the only inventor of the telephone.

What I learned from my research into the invention of the telephone is that we must constantly challenge and interrogate even the most established of narratives, rather than “tacitly accepting the garbled story that is whispered from one generation to the next”.

—Francesca Valente

Chapter One

THE YEARS IN FLORENCE / FLORENTINE EDUCATION (1808–1835)

In Florence, which had recently fallen under Napoleon's rule, Antonio Meucci was born to Maria Domenica Pepi and Amatis Meucci on Wednesday, April 13, 1808, at 5 o'clock in the morning. He was the eldest of nine children, four of whom died in early childhood.

Amatis was thirty years old when Antonio was born. They lived in a house with three other families at via Chiara 475—now via dei Serragli 44—in the working-class district of San Frediano, on the left bank of the Arno river. Amatis had set aside enough wood to keep the fire going the whole night and guarantee plenty of hot water for the birth of his firstborn. He was so thrilled and proud when the midwife announced it was a boy and showed him the baby. Antonio weighed over 6.5 pounds, with black hair and a dark complexion just like his father's. Maria Domenica was lying in bed, exhausted and almost unable

to speak. Amatis, on the other hand, was very excited and, with his wife's consent, decided to have Antonio baptized as soon as possible.

The following day he managed to have a carriage at his disposal for a few hours, and along with the baby, the midwife, and an aunt, crossed the Carraia bridge and reached the Baptistery of San Giovanni opposite the city's cathedral, Santa Maria del Fiore. Its octagonal marble-clad Romanesque baptistery, originally a Roman temple and later called by Dante "il bel San Giovanni," was in those years the place in Florence where infants, both rich and poor—including famous artists and poets such as Dante himself, and even members of the Medici family—were baptized. The iconic baptistery was a real architectural gem, enhanced by three Renaissance bronze doors featuring relief sculptures by Andrea Pisano and Lorenzo Ghiberti, the latter ones famously dubbed "the Gates of Paradise" by Michelangelo Buonarroti for their glittering beauty. The interior was lined with medieval golden mosaics.

Antonio was immersed into the cold holy water, and cried all the way home. That night, the Meucci family celebrated the happy event with a few friends, serving some Tuscan seasonal delicacies prepared by neighbours, along with a few flasks of excellent red wine, bought at a nearby wine store in via dell'Orto without any care for the price. Antonio's birth, however, did not make Amatis forget Napoleon's new rules based on *liberté, égalité, and fraternité*—liberty, equality, and fraternity. Most of them were meant to build a new, modern state in Tuscany, forcing the clergy and the aristocracy to pay taxes, along with

the ordinary citizens, in order to finance public works. Unfortunately, these new rules were largely ineffective because of the increased bureaucracy required to meet the standards set in Paris.

Amatis was working as a civil servant at the Palazzo Vecchio. His salary was modest, but Maria Domenica helped the family finances by knitting socks late into the night, by the dim light of an oil lamp. As a loyal government clerk, Amatis was aware of his duties. However, in the evenings after work he would often stop at his usual wine store and listen to his friends' often-critical comments.

Antonio was only a few days old when Elisa Baciocchi, Napoleon's sister, first appointed princess of Piombino and then Grand Duchess of Tuscany, arrived in Florence at the Palazzo Vecchio, even before the detailed schedule of the celebrations in her honor was finalized. But in the early months of 1814, when Antonio was just six years old, Napoleon's reign in Tuscany came to an end. Princess Elisa, along with her husband and children, left Palazzo Pitti on a cold February morning with ten carriages, stopped in Lucca for a few weeks, and then was forced to leave Tuscany altogether. As a result of the Paris Agreement in 1814 and the Congress of Vienna in 1815, Ferdinando III of the Lorraine family—now re-established as the Grand Duke of Tuscany, where he would rule until 1824—came back to Palazzo Pitti, and Florence once again became part of the Austrian Empire.

The duke's meek temperament did not offer his Italian subjects much hope of independence from the court of Vienna. The old political and social system was reinstated, with the

aim of fostering a peaceful Europe after the Napoleonic Wars. To ensure the stability of Europe's pre-existing governments, Klemens von Metternich, the mastermind behind the Congress of Vienna, insisted that the old Europe should suppress liberal ideas and quench any sign of insubordination.

At the time, Antonio was attending elementary school, where he proved to be precocious and mature for his age, intelligent and imaginative, asking endless questions his teachers could not adequately answer. Among the most frequent issues, he would debate the benefits of foreign rule, and developed the conviction that his hometown should be independent. His teachers suggested to Antonio's parents that the boy's education could be accelerated, and Maria Domenica and Amatis were very pleased—also thinking that, later on, Antonio would be able to help them financially.

The whole family, in the meantime, had moved to Casa Pasqui at no. 6412, at the intersection of via de' Servi and via del Castellaccio, where they would live for many years.

When Antonio turned thirteen, Amatis decided that he should attend the Accademia delle Belle Arti near Piazza San Marco. It was a unique, prestigious public institution, within walking distance of home, and free of charge. To be admitted, applicants had to pass a very demanding entrance test. In 1821 Antonio studied intensely to meet this challenge, and on November 27 of the same year, the Meuccis received a letter with the happy news that Antonio had been accepted as the youngest student at the college.

Since the Renaissance, Florence had distinguished itself as a center of scientific research under the enlightened patronage of the Medici family. The Accademia was founded by Cosimo I de' Medici in 1563 under the influence of Giorgio Vasari, and had welcomed great artists, scholars, and scientists, such as Michelangelo Buonarroti, Benvenuto Cellini, and Galileo Galilei, as members. The campus included the Royal Museum of Physics and Natural History, the Museum of Music, as well as the Museum of Machines, where Galileo's revolutionary design for the pendulum clock was prominently displayed.

The academy was meant to give students a holistic, well-rounded view of culture in its multiple artistic and scientific expressions, fostering curiosity and faith in progress through the development of useful and practical applications. No female student had been admitted to the academy until Artemisia Gentileschi in the seventeenth century, who soon distinguished herself as a painter.

During Antonio's years at the academy, he watched helplessly as four of his eight siblings died from childhood diseases. He realized how privileged he was to have been accepted by such a unique school, and observed, with great respect and admiration, how every member of the family worked so hard to supplement his father's income.

At the end of six years of attendance, Antonio would become a top scientific craftsman, equal to an engineer. His fellow students were all older than he was and belonged to distinguished Florentine families. Though this social discrepancy created quite an

uncomfortable gap, it gave the boy the determination to succeed at his new school in such a respected environment.

The academy had undergone major changes in its organization during Napoleon's occupation of Tuscany (1804–1814). These involved the introduction of a number of scientific subjects along with the traditional ones, such as drawing and art history, which were taught during the first year. The second year focused on music and rhetoric, as well as the study of the French language. Antonio learned how to play the piano well and found it stimulating for his creativity. The third year, dedicated to mechanical arts, gave him an opportunity to study chemistry and mechanics, including acoustics, physics, and electricity, and above all allowed him to put his studies into practice at the nearby Conservatorio di Arti e Mestieri. From the very beginning, Antonio showed a particular inclination toward chemistry and mechanics, including the latest electrical developments, such as the emerging field of galvanism. He was constantly seeking practical applications for the theories he was learning with such great conviction and dedication.

He was fascinated by Leonardo da Vinci's scientific diagrams of flying machines with bird-like wings, which four centuries later would lead to revolutionary inventions, such as the helicopter and the airplane, then unthinkable. Da Vinci was studied at the academy not so much as one of the greatest painters of the Renaissance, known all over the world for his *Mona Lisa*, but rather as a scientist who extensively researched topics such as anatomy, aerodynamics, and hydrodynamics, as well as botany, zoology, geology, and optics.

Antonio, already a free thinker, was also intrigued by Galileo's bold astronomic discoveries that contradicted the ingrained Christian theology of his time—which was based on the belief that Earth, rather than the sun, was the center of the universe. At the University of Padua, Galileo incorporated the most powerful lenses available on the Venetian market into his newly invented telescope, which consequently could magnify by twenty times the satellites he was watching. This confirmed the pioneering work carried out by Nicolaus Copernicus almost seventy years earlier, based solely on naked-eye observations. Galileo catapulted to the forefront of the international scientific scene, despite his belief that the Vatican would be open to accepting the validity of his revolutionary discoveries, which clearly contradicted the Ptolemaic geocentric vision of the world.

Galileo's theories, for which he was tried for heresy under the Roman Inquisition and then placed under house arrest, could be demonstrated at the academy where he had been a young instructor, in particular in the observatory of its Museum of Physics and Natural History. This had become a real hub of creativity, especially under the Grand Duke of Tuscany Leopold II, son of Ferdinand III, who ruled from 1824 to 1859. It turned out to be a vital workshop for Antonio, too, affording him daily access to the Museum of Machines as well as the Laboratory for the Fabrication of Instruments of Physics.

Thanks to some of his gifted professors, Antonio was able to acquire an invaluable know-how, both theoretical and practical. Francesco Focacci was teaching mathematics and mechanics, as well as superintending the construction of machines of different

kinds. Antonio Targioni Tozzetti, a renowned medical doctor and botanist, was teaching applied chemistry, by then no longer a marginal topic but a highly respected academic discipline with technical and industrial connotations. At that time, in the early years of the restoration of the Austrian rule, these protagonists of the Tuscan scientific scene were considered the best two professors in Florence in their respective fields. Moreover, Felice Gori, the masterly royal machinist, held Sunday tutorials to enrich young craftsmen in their specific disciplines.

The classes Antonio attended at the academy were highly advanced, experimental, and interactive. On one hand, it was a unique pool of free-thinking intellectuals, deeply anchored in science and technology; on the other, a privileged group of students eager to learn about the most innovative subjects.

The contrasting theories on electricity from Luigi Galvani (1737–1798) and Alessandro Volta (1745–1827) paved the way more than anything else to Antonio's future research and unique discoveries. Galvani was a biologist and one of the most illustrious Bolognese scientists of the eighteenth century. Through experimentation on frogs, he studied and grasped the functions of nerves and muscles as conductors and receptors of brain stimuli. Volta, a highly esteemed professor of experimental physics at the University of Pavia, was skeptical of Galvani's animal electricity theory, proposing instead that an electrical current is generated by contact between different metals. Volta's theoretical and experimental work in this area resulted in his invention and actual construction of the first battery, proving that electricity could be produced chemically. The prevalent

theory that electricity was generated exclusively by living beings was finally dismissed.

Antonio, inspired by Volta's experiments, was able to construct his own rudimentary batteries and do his first experiments by piling up zinc and silver discs, separated by paper discs soaked in acid and salt, materials available at the school. This way, a chemical reaction was triggered between the metals, resulting in a stream of electric current whose intensity could be increased or decreased. It was indeed a great achievement, even though it worked only intermittently.

Antonio was also interested in studying the effects of magnetic fields on electrical currents, the understanding of which underpinned the subsequent development of generators and motors. Electromagnetism and electrochemistry—in particular, electromagnetic induction and electrolysis—were leading fields of research and invention, with wide-ranging consequences. The sheer impact that the developments in this field had on people's lives, and on society at large, is similar to the radical innovations currently being brought about by artificial intelligence.

While Antonio was deeply steeped in his favorite studies and research, he was asked by his father to start working as well, to supplement the family's meager income. Although he considered himself a mechanic and an electrician, at that time electricity and mechanics offered few opportunities for work, so Antonio had to content himself with a less inspiring job. His sister Adelaide was twelve years old and was doing some embroidery work, while Luisa was ten and offered great help around the house. The other siblings were too young to contribute.

Thanks to the position of his father, now a senior civil servant of the Grand Duchy of Tuscany, Antonio was hired in 1824 as an entry-level guard, and later promoted to assistant gatekeeper, stationed at Porta San Niccolò, Porta San Gallo, and other gates of the city of Florence. He was essentially a customs official, stamping passports, inspecting goods, and collecting taxes. Antonio was required to wear a uniform and work eight-hour shifts, sometimes extended to sixteen hours, submitting himself to military discipline and rigid timetables. He had just turned sixteen and his salary was 40 Tuscan lire a month, equivalent to about \$400 per month today.

Unlike in the eighteenth century, after the Congress of Vienna the borders were enforced and patrolled by the Grand Duchy police task force to ensure the so-called Buon Governo (Good Government) and the respect of civic order, based on strict surveillance and, if necessary, repression. The police became increasingly invasive, inspecting people and ideas more than goods. The text of documents, publications, and correspondence was thoroughly checked, and often censored if it was perceived as a threat to the government. According to the Austrian authorities governing Tuscany at that time, equal justice and fair administration could be guaranteed only by absolute monarchy. Their subjects were supposed to be subservient, unable to participate in the government or communicate with one another, except within the parameters graciously allowed by the sovereign. The G. P. Vieusseux Scientific-Literary Cabinet in particular was constantly under surveillance since it was originally established in Switzerland, providing a unique open library

in Florence and facilitating an unprecedented exchange of ideas at a European level.

Whenever Antonio's work allowed him some free time, he would scrupulously attend classes at the academy, where most of his professors were reluctant to accept all the new rules imposed by the Austrian authority. Starting from 1821, in fact, a deep mistrust and unrest circulated among people from all walks of life, and an informal network of secret revolutionary societies, called the Carbonari, was formed in Palermo, Florence, and Turin to fight foreign rule. Antonio became more and more involved in secret patriotic meetings, firmly convinced that Tuscany, at least, should get rid of the oppressive foreign rule.

He believed that the main goal of the Congress of Vienna in redrawing the map of Europe had indeed been reached by restoring the territorial order that had existed before the Napoleonic conquests. Nonetheless, it had failed because it did not take into account the rising nationalism across Europe, a force that would destabilize the continent throughout the nineteenth century. The Grand Duchy of Tuscany, once restored to the hands of the Lorraine family, had indeed succeeded in creating a balance of power and diplomacy. However, this seemingly peaceful state under Leopold II, who ruled for thirty-five years until the unification of Italy, was based on a stagnant status quo reinforced by the constant intervention of the police.

Antonio was arrested more than once and imprisoned for insubordination to the Grand Duke, on one occasion for hiding a stolen weapon and another for distributing flyers against the Duchy. His life became gradually more complex and demanding,

especially at work. Because of his background in chemistry, he was put in charge of a team of guards assigned to the delicate task of lighting the fireworks whenever there was a major celebration. These events were planned by Leopold II's wife, the Grand Duchess Maria Anna of Saxony, who held powers similar to those of a governor.

On the occasion of the birth of one of her children, the plan was to light up for three nights in a row the Piazza della Signoria, the most important square in Florence, a symbol of the Medici power, home to the Palazzo Vecchio. The launchers, set up across the Arno river, were given eight to ten rockets each, under the direction of fireman Gaetano Baratti. He had innovatively used chlorates to obtain more intense colors, forms, and sounds instead of the usual nitrates, which were less explosive and dangerous. Baratti made a number of small pellets of pyrotechnic composition called stars, which contained metal powders, salts, or other compounds that, when ignited, make special spark effects in displays that were usually run by licensed professionals.

On the first two nights, everything went well. The whole crew was operating from a scaffolding built for the occasion, and the fireworks were very successful and widely admired by a huge crowd. On the third night, however, after Antonio lit the fuse, something went wrong. The rockets went even higher than the previous nights. Instead of falling into the water of the Arno, as planned, sparks ended up injuring those gathered on the other side of the river, causing some real damage. Eight people were injured. The police intervened immediately and arrested all three

crew members, who were deemed responsible and subsequently jailed.

Antonio was the youngest of the group, yet increasingly suspected of using his position as assistant gatekeeper to express his independent spirit and protest against Austrian supremacy. He was accused of being part of the Carbonari network and of playing an important role in the struggle for the Italian unification, called the Risorgimento. Further infractions followed shortly after. Over time, Antonio had earned the reputation of being a dreamer, a careless young man rather than a diligent worker. As a result, he was sentenced to eight days in jail, three of which would be spent on bread and water alone.

While Amatis Meucci was escorting his son to prison, the police superintendent advised him to write a letter of appeal to the Buon Governo, which he did immediately. The police superintendent sympathized with both of them and made sure that Antonio received a proper meal before going into jail.

Amatis petitioned for his son's release with the following letter:

The Son of the Undersigned who is in Prison has not committed crimes such as to taint the honor of his Family, nor is he Guilty of any other offense if not lack of consideration and carelessness to be attributed to his youth, and which did not allow him to reflect on the damages which he has involuntarily caused; Such circumstances torment the Heart of a Father, who Humbly Implores The Goodness, The Clemency and The Mercy of your Most Illustrious

Excellency, to ascribe to his Youth and lack of experience what the Son is Guilty of. . . And therefore Begs you to be so kind as to reduce the right Punishment to comfort an Afflicted Mother and to Forgive him the involuntary rather than deliberate shortcomings and to condescend to allow him to return to his duty as Gatekeeper, the Suspension of which increases day after day the new troubles that fall upon this Innocent and Unfortunate Family.

A reply arrived immediately, accepting Amatis's proposal. Luckily, the Criminal Court granted Antonio and the others involved the benefit of the doubt. Thanks to his father's intervention and his position at Palazzo Vecchio, Antonio managed to regain his freedom in just three days by only paying a fine.

In the meantime, he managed to complete his studies in chemistry and mechanics at the academy in 1828 while helping the family finances by keeping his job as assistant gatekeeper. However, after his latest release from jail, he was regularly followed by the police because he was constantly suspected of plotting for the liberation of Tuscany. He was jailed yet again in 1829.

Antonio was a handsome young man who had conquered more than one heart by the time his boss, Gaetano del Nibbio, discovered that his lover—the very attractive wife of the owner of Trattoria del Chiù—also had a crush on Antonio. Driven by jealousy, Gaetano reported him to the Buon Governo for abandoning his post while still on duty. Accused of misconduct, Antonio was sentenced to one month in jail and had his salary

suspended. He was subsequently transferred to work at Porta Santa Croce and then to Boscolungo, a town in the Apennine mountains. The accusation was particularly painful because it was fabricated, and his father, Amatis, who had proven through the years to be a civil servant of flawless morality, had just forwarded a second petition to the Buon Governo requesting a grant to support his six children, two of whom were seriously ill, and his eighty-nine-year-old father.

In spite of the positive report made by Antonio's chief in Boscolungo, in which he was praised as a serious and reliable young man, on July 13, 1830, Antonio resigned from his post without getting any support from his more deferential colleagues. His patriotic aspirations had been closely monitored. Having been rather lenient for the first fifteen years, the local police became less tolerant, and Antonio was one of the first patriots who lost his position as a result of obstinately pursuing his brave convictions. In this same period Pope Pius VII had condemned the Carbonari as a Freemason secret society and excommunicated its members.

At the age of twenty-two Antonio had to look for another job, hopefully one more attuned to his true aspirations. He turned to the theatre.

At that time in Florence there were about twenty theatres. He began to work occasionally as an assistant technical supervisor at Teatro Alfieri and Teatro Goldoni, as well as Teatro della Quarconia, established in 1650. By creating such special effects as rain, wind, lightning, and thunder, he soon realized that the theatre environment, with its magic, truly attracted him.

The Quarconia was particularly popular for giving audiences the option of bringing their own food and wine to performances. The atmosphere was rather rowdy, and nights often ended with the launch of leftover bones and apple cores from the gallery to the orchestra, or from box to box. The inevitable conclusion of these boisterous and unruly gatherings was the arrival of the police and the ambulance.

In October 1833, Antonio, then twenty-five, was advised to introduce himself to the head of La Pergola, a unique historic opera house, located in the center of Florence on via della Pergola, from which it took its name. The building had been designed under the patronage of the Medici family in 1656; primarily used by the court, it was the most important venue in town, and represented a milestone in the history of theatre architecture worldwide. With La Pergola, the Italian-style theatre—with its traditional horseshoe-shaped auditorium and three rings of boxes topped with a gallery—came into existence. In 1718 it was opened to the public, and in the early nineteenth century, lavishly restored.

In this theatre, a landmark in the development of melodrama, the great operas of Mozart were heard for the first time in Italy. Composers Vincenzo Bellini, Gaetano Donizetti, and Giuseppe Verdi were given their premiere productions. La Pergola was attended almost exclusively by the nobility and wealthy foreigners staying in Florence during their Grand Tour. When the Grand Duke of Tuscany Leopold II or members of his family were in attendance, not a single noise could be heard in the opera house.

Antonio was first received by the chief stagehand of the theatre, Artemio Canovetti, whose difficult job was to set up pulleys and counterweights to move the scenery. Knowing that La Pergola was always in need of talented people, Artemio introduced Antonio to the internationally known impresario Alessandro Lanari, a leading figure in his field. Since 1822 he had successfully brought the best of Italian opera to Florence, turning his theatre into an experimental workshop, involving not only visual arts but also chemistry, physics, and optics at their best. It had become a beacon of advanced technology, recently equipped with heating. His aim was to attract different audiences, increasingly striving to provoke strong emotions, therefore requiring diversified and complex stage effects.

In spite of his short stature and grey hair, Lanari possessed a charismatic, magnetic personality, and imposed his style and working method on his employees. His life was adventurous, as he traveled constantly to hire the best singers and directors available, not to mention navigating a complicated personal life, with children from both his first and second marriages. With a touch of irony and admiration he was called “the Napoleon of the Italian impresarios” and “the greedy pirate” because he was reputed to be very stingy. He underpaid his collaborators and composers, but when he had to stage a new production, he spared no expense.

He was meticulous and fussy, controlling every detail, and this was the secret of his success. Lanari decided the theatrical program, and for each production approved the specific stage design, the sets, and the number of rehearsals before the opening

night. He was equally feared and loved by his employees, and assumed the right to openly reproach them if they did not meet his high expectations. Lanari was not too tolerant of directors or critics either. He felt that even journalists had to treat him and his theatre with respect, and would not tolerate any criticism on the program or performance, since each *mise en scène* cost him a fortune.

He was admired as a skilled and dedicated administrator, and profitably managed the finances of La Pergola, corresponding with Giovanni Ricordi, founder of the historical music publishing company, as well as with the most important composers of the time, including Vincenzo Bellini and Saverio Mercadante, and singers of the caliber of Giuseppina Strepponi and Luigi Lablache.

When Lanari met young Meucci, he hired him on the spot, realizing he would be a great asset for La Pergola, given his previous experience. Antonio was so elated that all his hard work at the academy was finally paying off. He was being put in charge of lighting and sound at one of the leading theatrical establishments in Italy, rewarded for the first time with a dignified salary and even a private workroom behind the stage. His dream had come true. He was free to build on his hard-won education at last. No more wasting his precious time checking passports, inspecting goods, or collecting taxes! No more wearing a uniform and feeling suffocated by rigid timetables and a military discipline under a foreign authority! He had never lacked self-esteem, and that night Antonio celebrated this turning point

in his life at Trattoria del Chiù with close friends, arriving home at dawn, where his mother was still waiting for him.

The following day he did not need the alarm clock or his mother to wake him up. He knew this was the beginning of the professional life he aspired to. In spite of the few hours of sleep, he was full of energy and ideas. A hopeful new future was ahead of him.

The arrival in Florence of a new generation of scientists had been instrumental in renewing Antonio's interest in keeping up with his experimental activity—in particular, how to apply what he had learned from Leopoldo Nobili's legendary twelve open masterclasses on Volta's battery. After the failed uprising of 1831, in which the distinguished patriot *Ciro Menotti* paid with his own life, Nobili was forced to go to Paris in exile. The same fate befell *Giovanni Battista Amici*, professor of astronomy, who had to leave town not to compromise his strong beliefs.

Antonio had maintained his interest in the sciences. Now, his position would give him the unique opportunity to address familiar issues such as optics, mechanics, chemistry, electricity, and physics in the context of the performing arts.

La Pergola was a modern institution, with a capacity between 900 and 1,300 people and state-of-the-art technology. Antonio was very absorbed in his work, always eager to learn everything about the technical aspects of the theatre and his new multifaceted job. He arrived on time each morning and he was the last to leave in the evening. He was disciplined, generous towards others, and quick to carry out his various duties while keeping his patriotic aspirations to himself. Antonio enjoyed

solving any practical issue with intelligence and competence. For example, in order to change sets, both during rehearsals and performances, the stagehands used either large handkerchiefs or torches as signals. The audience would grow impatient during the seemingly interminable time it took to change the sets between scenes.

Not even a year after he had been hired, in 1834, Antonio invented the first acoustic telephone in history. This practical contraption consisted of two cones connected by an empty pipe. A person could speak into one end and the voice would carry through the pipe to a listener on the other. From his control room next to the stage, he would transmit orders to the stagehands in the fly gallery and coordinate the many extras, thus eliminating the awkward and dangerous use of handkerchiefs or torches. This first device amplifying the human voice was highly innovative and proved very useful, cutting the time needed to change sets by half.

This unique mechanical invention, not yet electric, marked Meucci's first step on a lifetime's adventure, feeding the obsession with research that was to become the very focus of his existence. Overnight, it won him the respect of his colleagues and, in particular, Lanari, who considered his theatre as a think tank of innovation and Antonio his most reliable and gifted collaborator. Antonio's *tubo acustico* still exists and can be admired at La Pergola as a museum display.

During his two years at La Pergola, from 1833 to 1835, Antonio also dramatically improved the lighting system. Candles were still used to illuminate the stage and were later replaced with

gas burners between 1834 and 1850. Inspired by Galileo and the way he built his own telescope, which included hundreds of tiny mirrors, Antonio once again showed his inventive side by repositioning the existing mirrors behind each candle so they would magically disperse the light in all directions. He also worked with a newly acquired electrostatic machine, which produced additional light by generating a strong electrical charge. The audience benefited from the improved lighting effects made possible by practical technology. Though it was all invisible to the audience, it increased the power of illusion and imagination at this experimental theatre.

Antonio's duties included improving the theatre's poor acoustics, especially in the back seats. Capitalizing on his newly invented acoustic tube, he created a megaphone that amplified and directed the voices of the performers. Unfortunately, it was never used because Lanari rejected it on aesthetic grounds.

During these highly productive years at the theatre, he met Ester Mochi. From the age of fifteen she had been working full time as a dressmaker at La Pergola, assisting Lanari's sister, Isabella, who oversaw the theatrical costume atelier, located in the same building where Antonio worked. Ester helped design and tailor the costumes of each major opera singer.

Isabella, like her brother, was a perfectionist and sometimes requested that a hem or a pleat be done and redone up to ten times. This required meticulous handwork, since sewing machines had just been invented and were not widely used. Unlike Lanari, Isabella was amiable, always smiling, and treated her assistants with great respect.

Ester, with intense black eyes and long raven hair neatly braided, was twenty-three when she met Antonio, who was two years older. Whenever he would walk by the atelier, their eyes would meet. He later noticed she had moved her chair next to the open door of the main exit, so she could have a better view of him passing by.

One day Isabella asked her to show some fabric to her brother, the great impresario, for his opinion. While rushing to his office, Ester came across Antonio on the staircase, who asked her why she was in such a hurry and expressed the wish to know her better.

After that fortuitous encounter, Antonio thought of her all the time. He could not eat or sleep, to the astonishment of his parents and siblings. While at work, both of them sought every occasion to bump into each other. In the evening Antonio would wait for her after work, not in front of the building but discreetly a few yards away, because she did not want to be seen by her colleagues. They would walk together for a while and exchange ideas along the Arno river up to via dei Serragli. However, she would not allow him to walk her all the way home, where inevitably he would have met her parents.

He was rather introverted, so it was not easy for him to express his feelings, even though he often told her he wondered why he had not met her before. They both came from poor families in the San Frediano district, and both started working at a very young age to supplement the household income before being hired by La Pergola, thanks to their professional expertise.

Ester's mother, Assunta Papini, gradually allowed them to meet and go for walks, during which they would share their dreams with each other. One evening on the Ponte Vecchio, Ester unexpectedly told Antonio they should get married. Since they loved each other, she figured, why waste time? She had already informed her mother of her intentions. He replied that he had not yet been able to find the courage to ask her, but he agreed wholeheartedly.

Back at home, Antonio's mother, Maria Domenica, noticed how silent and particularly pensive her son was. When she asked him about it, he told her he intended to get married. So, as custom required, his mother sent her husband, Amatis, to pay an official visit to Gaetano Mochi, the father of the future bride. Gaetano was wondering whether Antonio was that same young man who often ended up in jail for patriotic reasons, but admitted that his daughter was in love and eager to fulfil her dream and marry him.

The wedding preparations took all autumn and winter. Every Sunday Antonio and Ester went for long walks in the Boboli Gardens, and often he would extravagantly hire a carriage to go out of town, to Poggio Imperiale. As Ester was saving every cent for their new life together, she was concerned by Antonio's generosity. She would reproach him and sometimes even cry that she feared living in poverty again, as she did in her childhood. They managed to find a small, lovely furnished apartment at a reasonable price in the Fondaccio di Santo Spirito area. Finally, the date of the wedding was set for August 7, 1834, in the grand Santa Maria Novella basilica in Florence.

After the ceremony, Ester insisted on prolonging their ride in a rented carriage up to the nearby town of Fiesole. The two best men paid for the unexpected expense. A lovely reception and an intimate wedding banquet followed until the early afternoon, and then the couple retired to their new apartment for the honeymoon for two days, which was the maximum leave that Lanari allowed.

Back at work, Antonio was also helping—unasked—in other departments as a problem solver, even in the atelier where his wife was working on costume design. He'd often be asked to accompany Lanari out of town, and would also spend hours in the control room or in the fly gallery, where he was constantly refining his new invention and testing it. He sometimes even involved the singers, disturbing the orchestra rehearsals and upsetting his direct boss. His colleagues gradually lost interest in this acoustic research and thought Antonio was just obsessed with this contraption while he gradually became uneasy at work.

Even at home he involved his wife in testing, trying for hours to see if the acoustic tube would work both ways. One of them would speak into it while the other would listen, and vice versa. He was convinced that his invention represented a major breakthrough and that one day they would become rich and famous. Indeed, speaking tubes like Meucci's opera house invention would soon start to be used on ships and in houses, allowing people on different floors to communicate with one another.

Meanwhile, Antonio was experiencing further discomfort at work because an anonymous letter denouncing him—suggesting

he had never given up his patriotic aspirations—was sent to Lanari's attention.

In fact, before being hired at La Pergola, Antonio was involved in the conspiracy for the liberation of Tuscany in 1833, and had served months in jail with the well-known patriot Francesco Domenico Guerrazzi for joining Giovane Italia (Young Italy), founded by Giuseppe Mazzini. The aim of the new movement was to promote a general insurrection in the Italian reactionary states. Mazzini was convinced that a popular uprising would ultimately create a unified Italy. The movement garnered about 60,000 convinced patriots, including humble workers, young lawyers, scientists, artists, and many members of the Carbonari, previously dispersed and ostracized by the Church. The most famous member of Young Italy was Giuseppe Garibaldi, who, once sentenced to death, chose to go into exile and keep promoting Mazzini's enlightened vision.

From the moment Lanari received the letter, the surveillance on Antonio was relentless, and the Austrian authorities, ever more viciously repressive, labeled him as *persona non grata* to the Grand Duke. Antonio was explicitly advised, through his father, to leave Florence to avoid being jailed again. That same year the Viesseux Cabinet was heavily censored until it was forced to close down, marking the end of an era of open-mindedness, free thinking, and fruitful circulation of ideas.

Antonio received a lucky break. In the fall of 1835, thanks to a highly appreciated introduction from Lanari, Antonio was given an opportunity to help establish Italian opera in Havana. Renowned Catalan impresario Don Francisco Marty y Torrens

offered him and his wife a five-year contract. The Meuccis were glad to start a new chapter, however challenging it might be.

Before Antonio left Florence, he reaffirmed his affiliation with the Freemasons as well as with Giovane Italia—which had just expanded into Giovane Europa, an internationally oriented association of committed patriots that, in the years to come, would lead to the unification of Italy. With their support, Antonio hoped for more appealing living conditions on a far-away island across the ocean such as Cuba.

He felt truly privileged to be able to escape the haunting surveillance of the local Florentine police by accepting, at just the right moment, an appealing contract as chief engineer—along with his wife as chief costumer—at Havana's Gran Teatro de Tacón. The theatre, soon to be built and dedicated to the governor, Don Miguel Tacón y Rosique, was going to be the largest in the Americas, as well as a prominent cultural center in the New World.