

Galileo's Lessons for Living and Working Through a Plague

An outbreak in Italy in the 1630s forced him to find new ways of doing his research and connecting with family
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Milton visiting Galileo in the prison of the Inquisition. Credit: Tony Baggett Getty Images

The novel coronavirus has upended our world over the past few months, forcing people to learn how to work in entirely new ways. For scientists in particular, Isaac Newton has repeatedly been held up as a model of epidemic-induced productivity, since he spent his 1666 “year of miracles” avoiding the plague in the English countryside and developing his ideas on gravity, optics and calculus.

But isolation and quiet contemplation make up only one model of science during plague times, and one to which few of us can really relate. Galileo Galilei, the astronomer, physicist and mathematician who turned the telescope into a scientific instrument and laid the groundwork for a new physics of motion, presents us with an inspiring and more relatable model of scientific work in a time of crisis. In fact, several of the most public and turbulent years of Galileo’s life took place during the great plague outbreak of 1630–33.

Galileo, who was born in 1564, had been a child in Florence during the previous major Italian outbreak of plague in 1575–77, which ravaged Northern Italy and killed 50,000 people in Venice—one third of the total population. As a student of medicine at the University of Pisa, where Galileo began his studies, he certainly would have learned more about the notorious disease. Though he soon abandoned his father’s wish that he pursue medicine and turned instead to mathematics and astronomy, he nevertheless continued reading and talking about the plague.

By 1592, Galileo had achieved a prestigious position at the University of Padua, and in 1610 he published his *Starry Messenger*. The slim volume reported on the discoveries he made with his telescope: previously unseen stars burst from the frames of the pages, mountains soared from the surface of the moon, and new “Medicean stars” (actually, moons), initially named after his would-be patron, processed through their orbits around Jupiter. That same year, his friend Ottavio Brenzoni sent him a copy of the treatise he had recently published on plague, which in retrospect serves as a reminder that Galileo’s discoveries in the heavens could never be entirely divorced from events on earth.

Galileo’s correspondence contains regular references to the outbreak of plague in Tuscany that began in 1630. We read the defensive response of Galileo’s nephew Vincenzo after he fled to a small town outside Prato, leaving Galileo with his young son, “Let me say first that when I decided to come here I did so out of desire to save my life, not for recreation or a change of air.”

We empathize with the dark humor of Galileo’s disciple Niccolò Aggiunti, professor of mathematics at Pisa, who moved back in with his father in Florence when the university closed and was lamenting this renewed parental oversight: “I want to live well... but he wants me to die healthy.... As long as I don’t die of plague, he’s happy to have me die of hunger.” Looking back on our own lives of a few months ago, we know just what Galileo’s dearest friend, the mathematician Benedetto Castelli, meant when he reflected wearily in 1631 that it felt “like a thousand years” since Galileo had been in Rome with him.

Plague also became an obstacle and an opportunity for Galileo’s most famous and controversial publication. Galileo had been in Rome in the spring of 1630 to try arrange for his *Dialogue concerning the Two Chief World Systems* to be published there. This required arranging for it to be printed through his scientific society, the Academy of the Lynx, and obtaining permission for publication through the Vatican’s censorship process. During that summer, however, plague appeared in Florence, and Galileo decided to print his dialogue locally, thereby greatly complicating normal censorship procedures. Parts of the *Dialogue* were checked by authorities in Rome, while other sections, including the final printing, were managed in Florence with the reluctant assent of the Roman censors. This disjointed, two-city, multiple-authority censorship process actually created space for Galileo to frame his arguments in favor of a moving Earth more forcefully than he might have otherwise been allowed.

In February 1632, Galileo’s *Dialogue* was completed in Florence. Although mail between Florence and Rome ordinarily took only a few days, the plague outbreak had led cities to implement restrictions on travel and transportation of goods as a matter of public health. As a result, only two copies of the *Dialogue* had reached Rome by June, with six more copies arriving in July. With more copies came increased attention to its contents and argument. As the text reached the circles of Rome’s Catholic elite, Pope Urban VIII and the Jesuits immediately expressed their outrage at the liberties Galileo had taken in times of plague. Within a week the book was banned. In September 1632, Galileo was summoned to Rome to testify before the Roman Inquisition. The epidemic was on the wane and the trial of Galileo was about to begin.

Now, the same delays that had impeded the mail, publication and circulation of his book seemed to work in Galileo’s favor, as he pleaded his own innocence and begged that the trial be moved to his home city of Florence. “And finally, in conclusion,” he wrote at the end of a long letter to his friend the papal nephew, cardinal, and inquisitor Francesco Barberini, “if neither my advanced age, nor my many physical conditions, neither the afflictions of my mind, nor the length of the journey in this present suspected time of tribulations [plague] are enough to stay the Tribunal ... then I will undertake this journey.” The Roman Inquisition responded in no uncertain terms: Galileo was to travel to Rome, or he would be arrested and brought there in chains.

On January 20, 1633, Galileo began his journey, which lasted more than three weeks and included mandatory quarantine. Six months later, his trial ended. Galileo admitted his errors, renounced his own work before the Roman Inquisition, and began the trip home from Rome to Siena to his villa in Arcetri, outside Florence, where he would spend the remaining nine years of his life under house arrest.

Though most observers of Galileo's censure and trial were concerned about his ideas, his daughter Suor Maria Celeste, a cloistered nun in the order of the Poor Clares, attended, at a distance, to Galileo's physical state. From behind the walls of her convent, Maria Celeste prepared him foods and remedies to ward off the plague. Along with a letter in November 1630, Maria Celeste enclosed two electuaries—medicines mixed with honey—in an attempt to protect his health. "The one that has no written label is composed of dried figs, nuts, rue and salt" and was bound together with honey. She advised him to "take it every morning, before eating, in a dose about the size of a walnut, followed immediately by drinking a little Greek or other good wine, and they say it provides a marvelous defense [against plague]."

The second medicine was to be taken in the same manner, but Maria Celeste warned that it had a bitter taste. She promised him, though, that she could improve the recipe if he wanted to continue taking either one. Galileo's year of plague and inquisition trials is also a tale of intergenerational care at a distance, as Maria Celeste worked from within the walls of her convent to leverage medical and spiritual remedies to support and sustain her beloved father.

Amid her concern for her father's reputation, Maria Celeste and other members of Galileo's family sent regular letters during his return trip, updating him on plague cases in the surrounding region. Their regular missives contained epidemiological gossip, tallying the local numbers of the newly infected and relaying the fates of those who had recovered or died. Galileo's family tracked the progress of the plague outbreak as they tracked his trip back home to a life of imprisonment. As we confront our own separation from loved ones, we should remember the ways in which Galileo's devoted family supported him at a distance during this tumultuous period.

Galileo's plague years illuminate the realities of scientific engagement in a world full of challenges. The challenges of articulating novel scientific discoveries that conflict with political and religious doctrine. The challenges of continuing an international scientific program over the course of nearly a decade of isolation and imprisonment. And, of course, the challenges of living in a time devastated by epidemic.

As we wrestle with how to continue our own scientific work in the face of the coronavirus pandemic, I suggest that we hold up Galileo as our exemplary plague scientist. Bolstered by his relationships with his family and friends and strengthened by electuaries of dried fruit and honey, Galileo's life teaches us that pursuing science has never been straightforward during an epidemic, and that it is nonetheless essential to persevere.