

Spreading the Revolution: Guyton's Fumigating Machine in Spain. Politics, Technology, and Material Culture (1796-1808)

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Salve Morvó! [sic]
Your inquiring mind
Made a sweet breath of life [...]
Which flying into the atmosphere
Purifies and destroys at once
The corrupted germ of death.¹



In 1806, the Spanish poet Rosa Gálvez (1768-1806) published a seven-page poem celebrating the lawyer, chemist and politician Louis-Bernard Guyton de Morveau (1737-1816). During the first years of the century, an epidemic of yellow fevers caused thousands of deaths on the Spanish coasts. Guyton had arguably fabricated a gas that destroyed the agents of contagion that stubbornly remained in the atmosphere and goods for years. This “sweet breath of life” as the poet called it, was the controversial oxy-muriatic gas.

Guyton was a champion of oxy-muriatic gas. He not only wrote about its properties, but also with the prestigious French instrument-makers the Dumotiez brothers, he developed a machine that released the gas.² The fumigating machine embodied two essential features of Lavoisier's system of chemistry: the theory of acids and the theory of combustion.³ As is well known, Lavoisier believed that all acids contained oxygen (including muriatic acid,

1 Rosa Gálvez, “Oda en elogio de las fumigaciones de Morvó [sic],” *Minerva o el Revisor General* 52 (1806): 3-10, on 8. My translation.

2 The reports do not distinguish between the two brothers, Louis Joseph and Pierre François. See Maurice Daumas *Les instruments scientifiques aux XVII et XVIII siècles* (Paris: Presses Universitaires de France, 1953), 378-79.

3 In Spanish it is often referred as *Máquina fumigatoria*; in French as *Appareil de désinfection*.

which Humphry Davy later demonstrated to be composed of hydrogen and chlorine). According to Guyton, the fumigating machine supplied a highly oxygenated compound of muriatic acid – oxy-muriatic acid– which destroyed contagious particles in a process akin to combustion.⁴ The machine was intended to prevent gangrene in soldiers' wounds and to disinfect the air of poisonous sites such as jails, hospitals, theaters, churches, and ships. It was also widely used during epidemics of yellow fevers in Europe.

This essay focuses on the fumigating machine as a means to explore how beliefs and attitudes became embedded in societies and also inversely, how ways of interpreting nature, society, and politics became embedded in artifacts. It will show, first, how the machine served to spread the new French chemistry; second, how it came to embody a new relationship between citizens and the state, and third, how this artifact was imported by the Spanish absolutist state, appropriated, and used for its own propaganda. It thereby adds to this volume's general argument against simplistic narratives regarding the intellectual foundations of the chemical and industrial revolutions and argues against a "linear model" of technological development.⁵ By focusing on a chemical artifact, it shows a historically more complex and significant interweaving of theory, material culture, and politics.

Simon Schaffer and Ken Adler have shown how instruments and technological artifacts are deeply political, moving beyond the view that instruments simply embody theory and visions of nature.⁶ Schaffer has stressed the links of eudiometers with dissenters' political agendas, while in his classic book *Engineering the Revolution: Arms and Enlightenment in France, (1763-1815)* Alder confronts the question of the politics of revolutionary guns.⁷ He argues that a

4 Ruth Ashbee, "The Discovery of Chlorine: A window to the chemical revolution," Hasok Chang and Catherine Jackson, eds., *An Element of Controversy: The life of chlorine in science, medicine, technology, and war* (London: British Society for the History of Science, 2007), 15-40; William A. Smeaton, "Guyton de Morveau, Louis Bernard," Charles C. Gillispie, ed., *Dictionary of Scientific Biography* (New York: Scribner, 1976), 600-4.

5 See the essay by John Christie in this volume for a statement of this argument.

6 Simon Schaffer, "Measuring Virtue: Eudiometry, enlightenment, and pneumatic medicine," Andrew Cunningham and Roger French, eds., *The Medical Enlightenment of the Eighteenth Century* (Cambridge: Cambridge University Press, 1990), 281-318; On the relationship of instruments and theory, Trevor H. Levere, "The Role of Instruments in the Dissemination of the Chemical Revolution," *Éndoxa: series Filosóficas* 19 (2005): 227-42; Bernadette Bensaude-Vincent, *Lavoisier: mémoires d'une révolution* (Paris: Flammarion, 1993); John Tresch, *The Romantic Machine. Utopian science and technology after Napoleon* (Chicago: University of Chicago Press, 2012).

7 Ken Alder, *Engineering the Revolution: Arms and enlightenment in France, 1763-1815* (Princeton: Princeton University Press, 1997); Charles C. Gillispie and Ken Alder, "Exchange: Engineering the revolution," *Technology and Culture* 39 (1998): 733-54.