



Jacques-Louis David, *M and Mme Lavoisier*, 1788. 259.7 x 194.6 cm (102.2 x 76.6 ins). The Metropolitan Museum of Art, New York. Photo Public Domain.

## UNFREEZING TIME

Patricia Fara\*

At almost nine feet tall and over six feet wide, this massive French painting dwarfs its neighbours in New York's Metropolitan Museum of Art. Apparently a snapshot depiction of a busy scientist and his adoring wife, its tranquillity is deceptive: they have been frozen in paint during a period of tumultuous change.

Dominating the scene with her luminous white dress, Marie-Anne Paulze resembles a muse, a source of inspiration for Antoine Lavoisier, who has temporarily turned aside from writing the book that subsequently established his reputation as a chemical revolutionary. The artist, Jacques-Louis David, completed this double portrait the year before the French Revolution erupted, but his wealthy sitters were already so unpopular among local citizens that he withheld it from public display. This elegant man in a dark suit was stripped of his possessions, thrown into prison and later guillotined; somehow, his adoring consort managed to stay alive.

Concealed beneath the surface, this canvas has a history of its own. Using the latest investigative techniques, Metropolitan curators have discovered that Paulze had once been wearing a large hat decorated with ribbons and artificial flowers. Since Parisian fashions changed rapidly, this dated the earlier version back to the previous year. Still more significantly, David changed the emphasis of his picture to make it more compatible with political ideals of progress and egalitarianism. By adding the prominently displayed instruments and hiding an expensive table beneath a red velvet cloth, he transformed a wealthy Parisian factory owner and his stylish wife into a modern couple dedicated to promoting French chemistry.

David incorporated the pattern of Lavoisier's career within his picture. At the bottom right, the chemist's leg is pointing to a row of instruments; arranged in chronological order from right to left, they illustrate the progressive stages of his experiments over the years. They have been painted with the meticulous care usually associated with a

Dutch still-life master. This close attention to detail displays David's virtuosity, but it also celebrates the time invested by the skilled artisans who made them: the artist is proclaiming his radical sympathies.

The more recent instruments on the table were crucial for Lavoisier's greatest achievement to date – demonstrating that burning involves oxygen, a very different explanation from the time-honoured practice of relying on an invisible, weightless substance called phlogiston. His success depended on accurate measurement. By weighing substances before and after a chemical reaction, he demonstrated that matter cannot be created or destroyed, which subsequently became a fundamental precept in chemistry. In another clean break with the past, Lavoisier introduced a new chemical language – the system of names and symbols still in use today. Banishing traditional labels that varied between countries, he replaced them with precise terms indicating their composition: for example, Epsom salts was rebranded as magnesium sulphate, or  $MgSO_4$ .

To promote this science of the future, David referred to the past. By adding neo-classical pillars at the rear of the scene, he reinforced its relationship with another picture that he was painting at the same time and had intended to exhibit nearby – the renowned pair of mythological lovers, Paris and Helen of Troy, holding the same enraptured pose as the Lavoisier couple. One of David's most famous paintings, *The Oath of the Horatii*, glorified self-sacrifice and patriotism by showing a Roman soldier saving his city as he singlehandedly defeats three opponents from Rome's rival, Alba Longa. Here, the gleaming scientific apparatus symbolises Lavoisier's victory over English chemists: by selflessly dedicating himself to research, he caused the downfall of old-fashioned phlogiston and established a new style of chemistry based on oxygen.

David's painting also relates to the Lavoisiers' own past. He has portrayed Paulze aged 30 and Lavoisier 45, but she was only 13 when they married. Already determined to be far more than an ornamental accessory, she immediately began studying chemistry and English to make herself his indispensable collaborator. She translated technical

papers, even adding her own comments and disagreements, and entertained distinguished English-speaking visitors such as Benjamin Franklin. Also trained as an artist, she provided twelve detailed plates of diagrams for the textbook Lavoisier is shown writing; drawn to scale, they enabled his instruments to be accurately replicated anywhere in the world.

Towards the left of the picture, a large portfolio holds some of Paulze's own paintings and drawings that she made as David's pupil. Amazingly, several sepia sketches survived the Revolution, even though their flat was ransacked by rioters. Now in an archive at Cornell University, two of them show Paulze sitting inside Lavoisier's laboratory, engaged in the crucial activity of recording observations during some experiments on respiration. In addition, hand-written notebooks reveal that she was the stock-keeping manager, ordering in the apparatus and supplies they needed. She described how he was at his happiest on Saturday mornings, when his enlightened friends came round and they 'ate lunch, discussed, and created the theory that immortalized its author.' Whereas David presents Lavoisier as a lone discoverer working in solitude, her sketches reveal a far

more realistic image of collective activity.

After Lavoisier was guillotined, the mathematician Joseph Lagrange quipped: 'It took them only an instant to cut off that head but it is unlikely that a hundred years will suffice to reproduce a similar one.' Even so, in a sense he lived on. After a stormy divorce from an American inventor, Paulze retreated to Paris, where several times a week she conducted salons, which became renowned for the diversity of the guests and the freedom of thought. Although Lavoisier was physically absent, her visitors felt as if they were entering a pre-revolutionary time capsule – especially as Lavoisier loomed over them from this giant double portrait hanging on the wall.

### **Main source and further reading**

Marco Beretta, *Imaging a Career in Science: The Iconography of Antoine Laurent Lavoisier*, (Canton, MA: Science History Publications, 2000), pp. 25–42

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