

Thank you for having me.

I am deep in the writing of a PhD chapter so I want to apologise if this paper bears the hallmarks of that.

My object of study today is Mary Somerville.

Or rather, the many Marys.

15

Even in her name here she is carrying the weight of three men, Fairfax (her father), Grieg (her first husband), and Somerville (her second).

Mary Somerville's place in the history of science is firmly established. Her portrait is carried on the **Royal Bank of Scotland** £10 note. Recognition in the circulation of capital, which is ironic given she had money problems all her life.¹

35

Though a celebrated scientist, her role in the **emergence** of photography has barely been recognised.

At the moment, I'm working with two desires that sit in tension with one another:

the first is to move beyond a discourse of singularly 'great' inventors of photography

the second to identify and **elevate the significance of peripheral and marginalised** figures in that history, especially women in 18th and 19th century Scotland.

1 min

I negotiate this tension by mapping the networks of collaboration these women were part of. These **networks transgressed the gendered boundaries** of the time to establish what **we today** know and recognise as photography.

First, some background.

1, 20

The invention of photography was announced in 1839. It is often presented as a history of two competing men: the Englishman William Henry Fox Talbot and the Frenchman Louis-Jacques-Mandé Daguerre. A race to see who would get there first. Why do firsts matter so much to me anyway?

1, 35

In these thoughts famously conceived on Lake Geneva, a scientist reflects on his invention:

¹ Her publishing royalties paid her brother-in-law's debts.

The astonishment which I had at first experienced on this discovery soon gave place to delight and rapture. After so much time spent in painful labour, to arrive at once at the summit of my desires was the most gratifying consummation of my toils. But this discovery was so great and overwhelming that all the steps by which I had been progressively led to it were obliterated, and I beheld only the result.

2, 05

Before I uncovered women's role in **the invention** of photography, I used to fictionalise it in passages such as this. For these words are not Talbot's or Daguerre's, but Mary Shelley's *Dr Frankenstein*.

2,20

I would cling to **the phrasing** of this sublime and fatal creation as it helped ground me in an imagined relation to **photography's past**, present and future.

These words feeling more generative than those penned by Talbot himself.

And then I learned this account was not entirely fictional: not only did both Shelley and Talbot generate their thoughts on Lake Geneva, **but so too** did Mary Somerville who spent time there in 1817.

Today, I want to begin with a provocation that photography was in fact invented by women.

2,52

By Mary Shelley on Lake Como.

By Elizabeth Fulhame in her eighteenth century Edinburgh home.

By sun gazers.

By witches' premonitions.

By suppliers, miners, workers.

By teachers.

By carers.

By women denied an education.

By servants.

By women seizing their inherited wealth.

By women nursing children and being made houseless.

By the enslaved.

By fishwives.

By unnamed assistants.

By abolitionists.

By working class subjects.

And, in this talk today, by Mary Somerville.

3,25

I want to look at three of Somerville's published experiments - all on **chemistry and light** - to position **her as a thinker for photography's future history**.

3,52

Initially, I turn to what is a vast published literature on Somerville, and I'm struck by the Many Marys I encounter there: savage, enclosed, perpetually in tears, unleashed, wife, mother, again mother, widowed, nursing, genteel, non-transgressive. Do other biographies of the 'Luminaries' of Science traverse such gendered terrain?

4,15

I go in search of other Marys in archival correspondence, in primary sources, in material **'objects of culture'**. I stumble across a method of retouching the archive on my own terms, re-enacting key experiments and drawing my own conclusions.

I've amassed quite a collection of source material which includes her hair (always so much hair!). I've gathered some of it here while I try to offer a(nother) rethinking of the invention of photography.

4,43

The corpus of Somerville's works are held in the Bodleian library. The documents there show the unfolding of her early experiments in light and chemistry.

I'm taken in...touching sources...handling...it helps. I can't articulate it, but this proximity is crucial and it dies when I try to give voice to it.

5,08

Field notes - I travel to Swindon to track down a glass prism once used by Somerville in her experiments with light. It turns out the item is on loan for a show in Spain. In these moments I do question my organisation and my pursuits. Past feelings of judgement about 'abnormal' behaviour in special collections have made me anxious. E.g. being questioned about wanting to 'weigh' glass plate negatives to understand the labour of a female workforce in Aberdeen, requests to handle items, hold them, see them without cellophane, view the dark slide used to load paper negatives. Given a polite telling off for wearing mohair jumpers. All procedures in place for good reason, but as a new researcher, I'm not always confident about insisting or explaining my methods.

5,56

Photography's invention required three basic things: a box or apparatus (the camera), the chemicals to arrest the view, and then the means to fix it. In Edinburgh in 1794, a woman by the name of Elizabeth Fulhame was engaged in the exploration of light-sensitive

chemicals. Less than a mile away, a young Mary Fairfax was being introduced to optical drawing aids and lessons in rendering light.

Although they did not define it in this way, both Fulhame and Somerville were engaging in the desire for the pursuit of capturing the photographic image. They were proto-photographers.

I find Somerville's in correspondence with 19th century scientist, Michael Faraday in 1836.

6,52

[ENTER FARADAY LETTERS]

Sending her some light sensitive paper he's prepared for her, he writes *Allow me to suggest that when you open it and apply it to paper for your experiments you should do so in a dark place or by candle light*

Ten days later she replies, *the chloride of silver answers perfectly*

This exchange significant. They arrive 3 years before the so-called invention of photography and represent a form of darkroom practice before such a language had even been established.

7,20

Mary took these findings and shared them with her French scientific connections. In 1836, these experiments with silver chloride in light are published by Francois Arago the person who would declare Daguerre's invention of photography three years later.

That feeling of discovery, how could I possibly be the first to write about this? A quiet rage and excitement forms. I learn the experiments were translated back to their original English and printed in Edinburgh in 1837. Why has this been ignored? Occluded? Overlooked?

7,51

I go back to the secondary literature I consulted two years earlier, and find a reference to Somerville's experiment as a form of 'primitive photography'. This is in a text on astronomy and women's chemistry.

In the field of photography, silence.

8,23

An epistolary study is calling, but I have other desires to fulfil. I want to undertake these experiments with light, to see what she saw.

Without doubt the most illuminating (and long-lasting) correspondence Somerville has is that with scientist John Herschel. The person who has been associated with coining the term ‘photography’ - although more recent scholarship points to Brazil. If she sent her photographic prints anywhere it was most likely to him.

The Herschels were a family of astronomers who worked across the solar spectrum²: his father William discovered infra-red radiation, while John would later go on to fix the rays of ultraviolet. Her auntie, Caroline Herschel also studied light, albeit at a greater distance, lightyears away. Together with Mary Somerville in 1835, the two women became the **first** honorary members of the Royal Astronomical Society. On her appointment Herschel wrote ‘now I can call you colleague’. SOMERCALL

9,10

This was the same year that Somerville’s experiments were published by Arago.

This is also the same time that Somerville is tutoring in mathematics, her student, Ada Lovelace.

9.24

HERSCHEL COLLEAGUE LETTER DETAIL

Biographers define Herschel as an ‘adviser’, but this seems insufficient. Colleagues, certainly. Their communications are worthy of a study of their own, they’re intimate, respectful, cosmic.

All three of the experimental papers that Somerville published, were what can be called ‘physical chemistry’, each exploring solar radiation.

9,48

In the 1840s now living in Rome, Somerville conducted her final *Experiments with Light*. Both her and Herschel were pioneering a technique known today as anthotypes – a non-chemical positive printing process using juices extracted from flower petals and vegetables. It works in the opposite way to her previous experiments of the darkening of silver salts. In this case the coloured-extract dyes the paper, and exposure to sunlight then bleaches it. The result is a direct positive colour image. In many ways, Somerville’s anthotypes from 1845 offer a proposal for a sustainable photographic future today. The experiments were published by Herschel on her behalf. If only we could have seen their physical form.

10,28

In their absence, I work with my photographic practice as an act of retrieval.

Last year, I set about re-enacting Somerville’s chemical and optical experiments. If Somerville and Herschel’s aim was to supply the primaries for a colour printing system, I wanted to produce a responding secondary system in the hues of Cyan, Magenta and Yellow,

² Caroline Herschel (John’s auntie) was thinking was also outside of the visible spectrum in the discovery of several comets.

made with red cabbage, beetroot and tur-mer-ic. It is a slow and demanding process, at mercy to bright sunlight, and it is a limited one. The colour photographs produced were ephemeral as they disappear over time. Even today, there is no known process to arrest the fading plant-based images other than to 'fix' them digitally. Though through making them, I realised that they weren't as fugitive as I had imagined. They could withstand quite a lot of exposure to light when handled properly. What if Somerville's notebook (which I had only visited digitally during lockdown), might be filed alongside some prints?

11,25

It's hard to write about this without sounding naïve about 'discoveries'.

On my first visit to the Bodleian, I order the notebook *Experiments on Light* - the pdf already sits on my laptop. I browse it slowly and take my time, it's quite familiar by this point. Like some hopeful child opening a present **I'm both expectant to find something I desire whilst simultaneously readying myself for inevitable disappointment** -

But this time, the thrill was very real.

Fandom, speculation, dedication all rewarded in the presence of some slips of paper.

11,58

Blue dips, brown washes, hues of cream and indications of past colours. The smallest of test strips, **unfoiled** and resting (being preserved) in the margins of her scientific notebooks. Understated in scale, but glowing in the folds of the pages holding them.

Their value is immeasurable. I'm yet to quantify this for my field.

They look like they may fall out of the seams of the book or be crushed in the folding of a page. If these were Herschel's, or Talbots they would have a catalogued entry of their own, digitised and filed in archival sleeves. I turn off my lights in a duty of care. Ah, and there's a single grey hair too - of course there is. We're now talking to each other.

12,41

And yes, I fully intend to project all the meaning onto these that I have been in search of. But before I adopt the authorial voice, I allow my emotions to take hold.

A new category is formed on my desktop, Somerville's Anthotypes. The archivist seems not to be aware of them. They have not been catalogued. The meticulous reading guide has no reference to these prints. The collection's hierarchies of the **written word blanky audible**.

13,05

INSERT IMAGES

I return home, on my phone I hold this 'tangible' physical record of a woman's contribution to early photography. They ought be understood as 'photographic'. Their

form is abstract, small, annotated and their orientation clearly vertical. I dream them into large canvasses; I elevate into some superior, bolder form. But their significance needs no enlargement, these minimal works are some of the earliest examples of colour photography. Their restraint is part of the appeal. A few weeks later in the same building, I attend a lecture by Garry Fabian Miller, he reflects on his successful career and the darkroom materials that made it - the same darkroom materials are also killing him in real time today. The colour chemistry proving toxic to the human body.

Somerville's colour works were never intended as art. She was a painter but these are controlled, scientific experiments, vertical solar studies with light which still hold the pin marks where they were once mounted in their moment of study.

14,08

But they are also conceptual photographs, experimental in form and inquiry, proposals to imagine another way of seeing.

Ironic that before the invention of colour photography, in 1845 we have a new way to rethink the future of photography as a more ecologically sustainable artform.

When I last presented a paper on this subject, I speculated on the existence of these works. Never published, I knew nothing of their physical existence.

In her *Recollections*, Somerville writes that unlike her, her husband had *let the time for publication slip by*.

It's a bit too close to home. I've not yet published my journal article. My writing speed distracted by a dyslexic mind that's always wanting to touch instead of type. I slowly watch others catch on to Somerville's photographic contributions, her bust gets rolled out for an exhibition in Oxford on the theme of early photography. New Power. Somerville sits in the 'Women' section of the show.

Then to consolidate matters, on a bank holiday weekend in March, taking my kids to the museum and thinking, *always thinking*, about my work, I have a dear friend email me. It was Somerville's anthotypes, published in the Guardian.

I was weirdly calm. I unclip my giant sleeping 3-year-old and heave him from his buggy and hold him on my lap for some comfort. At least it's all done now. I can take my time with my findings.

Why do firsts matter so much anyway?

Notes

I'm in an odd position. I'm an artist, not an historian, and I can say with certainty I'll be an authority on chemistry. To conduct this research of repairing a marginalised history, I've had to act, borrow, burrow, lift, (steal), trust, paraphrase secondary literature in the field of science.