The Pump on Broad Street

How a map of one Soho street settled an argument about disease

Science · Ms Achebe · 4 February 2026

Ten days in Soho

Broad Street, September 1854

More than 500 dead in ten days, all within 250 yards of one corner.

What the parish did
Cleared the drains. Burned the bedding. Whitewashed the walls. Told everyone who could leave to leave, and three quarters of the street did.

What nobody could say
Why it stopped where it stopped. Two streets over, in houses just as poor and just as crowded, almost nobody died.

Say the number and then stop talking. Someone always asks how many people lived there: about the same, street for street, as live in one block of flats today. That is what makes 500 in ten days the wrong sort of number.

What everybody already knew

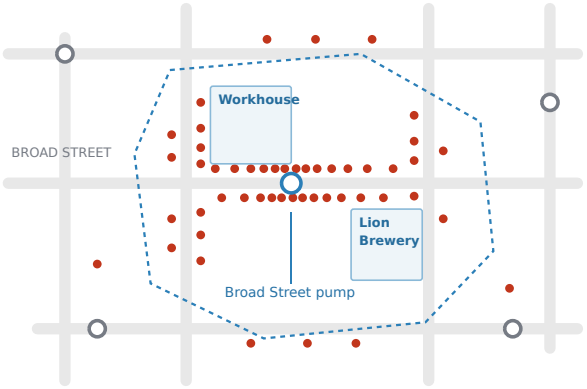
- Disease rises off filth as a smell. Call it a **miasma**.
- It is heaviest in the low ground, where the sewers run and the air stands.
- The low ground is where the poorest and the most crowded live.
- And that is exactly where the dying is worst. So: clean the air.

Every line of that is checkable
It fits the map of London, it fits who dies, and it fits what the street smells like. A theory that fits everything you can see is not a stupid theory. It is a hard one to argue with.

Read these out as if you believed them, because the people who held them were not fools. The class will want to laugh at bad air; do not let them until the last line is up.

What do you see?

- The dots pile into a few streets and thin out fast.
- There is a **water pump** standing in the middle of the pile.
- Round the other pumps there is almost nothing.
- Two big buildings inside the pile are empty.
- Snow drew a line: inside it, this pump is the nearest one.



Ask the question, then be quiet for a count of ten. Whatever gets called out, press its digit – 1 to 5, in whatever order they come; the right arrow takes the next one nobody has named yet, so you can always move on. Do not correct the order: if the brewery comes first, the brewery comes first, and the map is the same map either way. One more thing, if anyone in the room has “reduce motion” switched on: opacity stays and travel goes, so the points stop rising and simply fade in, while the map layers were plain fades to begin with. Nothing on this slide is carried by the movement.

Four ways to explain a map

Say one. Any one.

- Bad air off the drains.
- Something they ate.
- Poverty. The poorest suffer worst.
- The water from the pump.

> *Then why does it stop at the parish line?*

> *Then why a street and not a shop's customers?*

> *Then why the workhouse, poorest of all?*

> *Then the pump must explain who **lived**.*

This is the slide where you take suggestions and take them seriously. Press the digit for whatever they name; the question that goes with it comes up on its own, and that question is for them, not for you to answer. If nobody says water, do not lead them to it – number 4 is still there when the other three have run out.

The three that do not fit

- The Lion Brewery, halfway down Broad Street
- The workhouse on Poland Street, inside the worst of it
- A widow in Hampstead, three miles away

70 men, 0 dead

Their own well in the yard, and a daily allowance of beer. Not one of them drank from the street.

535 inmates, 5 dead

Its own well and pump inside the walls. The poorest people on the map, and almost untouched.

3 miles off, 1 dead

A cart brought her a bottle of Broad Street water every week. She liked the taste of it.

Three places break the pattern. Let them pick which one to open, and open it: the order genuinely does not matter, because each one is a whole argument by itself. Hold the brewery until last if you can – free beer is the line they will repeat at home, and it is also the cleanest experiment on the slide.

What is left standing

Bad air. Then the brewery, the workhouse and the widow are three coincidences in a row.

Food. Then it would follow a shop’s customers, and it follows a street.

Poverty. Then the workhouse should have been the worst place in London.

Water. It is the only one of the four that has an answer for all three.

Three sentences step back here rather than disappear. That is deliberate: the class has to see all four claims at once at the end, with three of them quiet, or the last line looks like an assertion instead of a remainder.

The handle

7 September: Snow at the parish board

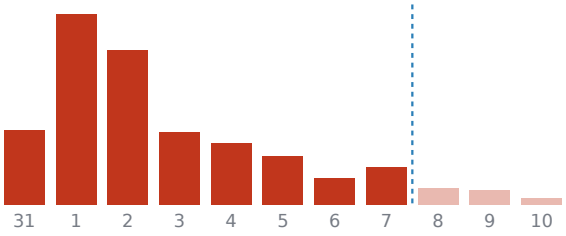
What he brought
A map with a dot for every death. A list of who drank where. The brewery, the workhouse and the widow, written out.

What he did not bring
Any account of what was in the water. Cholera would not be seen down a lens for another thirty years.

On 8 September the pump handle came off.

He had no germ, no microscope picture, nothing to hold up. What he had was this map and the three places that broke it. They gave him the handle anyway, and that is worth a sentence: they were not convinced, they were out of better ideas.

What the handle did not do



new attacks per day, 31 August to 10 September 1854

The dashed line is the handle. By then the street had lost three quarters of its people to flight, and the attacks had been falling for five days.

So the handle proves nothing. Snow wrote that himself. A cause you cannot separate from a coincidence is not yet a cause.

Expect someone to feel cheated by this slide. Good. The story they have heard before is that the handle stopped the outbreak, and the chart says it cannot have. Snow said so himself, in print, about his own case.

The proof was in the pipes

Two companies, one pipe each, down the same streets.

Southwark & Vauxhall — intake inside London	**315** deaths per 10,000 houses
Lambeth — intake above the tideway, 1852	**37** deaths per 10,000 houses
The rest of London	**59** deaths per 10,000 houses

Nobody chose their pipe

Same trade, same landlord, next door to each other. Everything is shared except the water, so everything except the water cancels.

This is the payoff, and it is not the famous bit, which is exactly why it is worth the time. Same streets, same houses, often the same landlord. The only difference between a family that died and a family that did not was which company had laid the pipe, and nobody chose that.

What a map cannot do on its own

- A pattern tells you where to look. It does not tell you what you are looking at.
- What turns a pattern into a cause is the case that should break it and does not.
- Snow had three of those, and then a whole city’s worth.

Cholera itself was not seen until 1884, thirty years after the handle came off.

Land this and stop. The map is the famous object, but on its own it is a picture of where, and where is not why. What made it an argument was three places that ought to have died and did not.

Before Thursday

- Write out the brewery in your own words. What is being held constant, and what is being varied?
- Find a cluster in the news this week — anything: illness, accidents, exam results. Name one thing you could check that would break it.
- One paragraph, either question. Bring it on paper.

The second one is the real task. Anyone can find a cluster; the question is what would have to be true for it to be a coincidence, and how you would find out.